Ko S. 16869, 16757

Urocarpidium killipii Krap.

Killip mss

Read over on boat for errors.

URTICACEAE. Nettle Family.

References: Liebman in Dansk. Vid. Selsk. Skrivt. V. 2: 285-313. 1851; Weddell in Arch. Mus. Paris 9: 1856-57. and in DC. Prodr. 16¹: 32-235. 1869.

Herbs, shrubs, or small trees, sometimes ~~covered~~ armed with stinging-hairs; leaves simple, alternate or opposite; plants monoecious or dioecious; flowers small, greenish-white, in unisexual or androgynous clusters; perianth 2 to 5-lobed or parted, or occasionally wanting; stamens as many as the perianth lobes or divisions and opposite them, the filaments reflexed in bud with reversed anthers, exserted with erect anthers at anthesis; ovary superior, 1-celled; style simple, the stigma penicillate-capitate or filiform; ovule erect or ascending; fruit an achene.

The Central American Species of Pilea

by. E. K. Killip

This was originally prepared for a proposed Flora of Central By Standley. The original copy was taken by Standley to Chicago, and formed the basis of his treatment in the Flora of Costa Rica and of Steyermark in the Flora of Guatemala.

I revised it some in 1937 for separate publication and rewrote the first four species, which is the style I would like to see used if it is ever published.

In 1950 I wrote the Urticaceae portion of WoodsOn's Flora of Panama, a copy of which is attached at the end of this volume. The key given there in a considerable improvement on the key in the following Manuscript, and should be followed in general.

All the new species here have been published but I have left in place a copy of my original description where that had not already been adapted in this manuscript.

Whenever I examined specimens from other herbaria which were not represented at the U. S. N. M., I noted these in this manuscript.

Unfortunately, this was typed with the species running along on the pages instead of a page to each species. I have today made an attempt (in the case of Pilea) to cut these up so that the inserted species and citation of specimens would come in proper sequence. I have not inserted in the key species described since the manuscript was oringinally prepared; to do this would entail a complete revamping of the keys.

E.P.K. Oct. 25, 1952

Type of Pilea variegata Seem.

a Bell.

Leaves opposite, often unequal; plants herbaceous.

Plants with stinging hairs; perianth of pistillate flowers 4-parted. . . . . 1. Urtica.

Plants without stinging hairs; perianth of pistillate flowers 3-parted. . . . . 2. Pilea.

Leaves alternate (opposite in certain species of Boehmeria).

Pistillate flowers subtended by bracts.

Plants shrubs or trees; staminate flowers in slender spikes, the pistillate in panicles. . 3. Hemistylis.

Plants annual herbs; flowers polygamous, in axillary clusters. . . . . 4. Parietaria.

Pistillate flowers not subtended by bracts.

Perianth of pistillate flowers none.

Flowers in axillary gloerules. . . . . 5. Phenax.

Flowers in long slender spikes or paniculate.

6. Myriocarpa.

Perianth of pistillate flowers present.

Stigma penicillate-capitate, or very short and becoming hooked in fruit.

Plants shrubs or trees; stigma penicillate-capitate.

Perianth of pistillate flowers 4-lobed, fleshy in fruit, the rachis not becoming enlarged.

7. Urera.

Perianth of pistillate flowers 2-lobed, unchanged in fruit, the rachis becoming enlarged.

8. Gyrotaenia.

Plants annual herbs; stigma becoming hooked in fruit. . . . . 9. Fleurya.

Stigma linear or filiform, persistent or deciduous.

Plants covered with stinging hairs; stems thick, succulent. . . . . 10. Urticastrum. Laportea canadensis

Plants without stinging hairs; stems not succulent.

Pistillate perianth strongly nerved; achene crustaceous, shining; stigma deciduous; leaves often entire. . . . . 11. Pouzolzia.

Pistillate perianth nerveless; achene not crustaceous, dull; stigma persistent; leaves toothed. . . . . 12. Boehmeria.

1. URTICA L. Sp. Pl. 983. 1753.

Annual or perennial herbs; stems simple or few-branched; leaves petioled, serrate, dentate or incised; plants monoecious or dioecious, the flowers in numerous axillary androgynous or unisexual clusters, forming elongate spikes, much-branched panicles, or nearly sessile glomerules; staminate flowers with a deeply 4-parted perianth; pistillate flowers with a 4-parted perianth, the 2 outer segments minute, spreading, the two inner much larger, erect; stigma sessile; achene flattened, ovate or oblong, enclosed by the inner perianth segments.

Flower clusters in elongate cylindric spikes, usually longer than the petioles.

Plants monoecious, the staminate clusters at the base of the spikes; spikes less than 3 cm. long. 1. U. nicaraguensis.

Plants dioecious; spikes more than 3 cm. long.

2. U. ~~sobeyana~~ leptophylla pubi. as copyeana by PCS.

Flower clusters in short, subglobose or short-cylindric heads, shorter than the petioles.

Leaves ovate or oval, obtusish, incised-serrate.

3. U. urens.

Leaves ovate-cordate, acute, coarsely serrate.

4. U. _____.

1. Urtica nicaraguensis Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 292. 1851.

Costa Rica (type from Volcán Irazú, near San Juan de Nicaragua).

Stem simple, 60 cm. high or more, minutely pubescent with reflexed white hairs, glabrescent below, and sparsely armed with stinging bristles; leaves pilosulous on both surfaces, armed above with white bristles, slightly rugose, 6 to 8 cm. long, 3 to 5 cm. wide, acuminate, cordate at base, coarsely serrate, the serrations irregularly crenate or denticulate; spikes androgynous, simple or few-branched; achenes ovate-oblong, 1 mm. long.

2. Urtica ~~cepeyana Killip, sp. nov.~~ leptophylla Hbr. ex Standl. (obviam dere. cite Hbr. Guatemala)

Stem erect, simple, sparsely pubescent with short, subreflexed, white hairs and sparingly armed with slender, straight bristles; stipules deciduous; petioles 1.5 to 5.5 cm. long, minutely pubescent and sparingly armed with bristles; leaves ovate or broadly ovate-lanceolate, 6 to 11 cm. long, 4 to 8 cm. wide, bearing a few weak bristles on the upper surface, 1 mm. long or less, glabrescent beneath, acuminate, cordate, 3 to 5-nerved at the base, the nerves conspicuous, strawcolored, glabrous, the margin coarsely serrate, the serrations denticulate, 5 mm. wide; spikes slender, 3.5 to 5 cm. long, 2.5 to 3 mm. in diameter, 3 to 5 at a node, simple, rarely branched at the base, densely pubescent, androgynous or unisexual; staminate flowers not seen; pistillate flowers

in subcontiguous glomerules, the exterior perianth segments 0.7 mm. long, the interior orbicular, 1 mm. in length and breadth, pilosulous without; achene broadly ovate.

Type in the U. S. National Herbarium, no. 799382, collected along the shores of the Rio Pedregosa, at Copey, Costa Rica, at an altitude of 1,800 meters, February, 1898, by A. Tonduz (no. 11929 Inst. Phys. Geog. Costaric.).

3. Urtica urens L. Sp. Pl. 984. 1753.

Guatemala.

Stem 15 to 45 cm. high, armed with stinging bristles; leaves 1.5 to 4 cm. long, obtuse, rarely acutish, rounded at the base, bearing, particularly on the upper surface, stinging bristles, otherwise nearly glabrous; heads androgynous, usually less than 1 cm. long; achenes ovate, 1.8 to 2 mm. long, smooth.

4. Urtica

Guatemala, Costa Rica.

Plant annual or perennial, the stem covered with stiff, stinging hairs; leaves up to 5 cm. long, coarsely serrate, the teeth often crenulate; plants monoecious, the flower clusters androgynous,

2. PILEA Lindl. Coll. Bot. pl. 4. 1821.

Alcea Raf. Anal. Nat. 179. 1815 (hyponym).

Repent, decumbent, or erect, monoecious or dioecious, herbs, often shrubby at base, often copiously covered with cystoliths; stems simple or branched; leaves in pairs or rarely verticillate, entire or toothed, those of a node equal or frequently very unequal and dissimilar; inflorescence capitate, cymose, paniculate, or spicate, unisexual or androgynous; staminate flowers with a 4 (rarely 3 or 5)-parted perianth and a rudimentary ovary; pistillate flowers with a 3-parted perianth, the segments often unequal, each subtending a scale-like staminode, the stigma sessile, penicillate; achenes compressed, orbicular to ovate.

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Leaves all entire. (1)

Leaves 1-nerved or nerveless.

Stem succulent, often becoming shrubby; leaves suborbicular to obovate, longer than wide. 1. P. microphylla.

Stem not succulent, filiform; leaves round-deltoid, usually wider than long.....2. P. hernarioides.

Leaves 3-nerved or triplinerved.

Leaves densely hirsute on both surfaces; stipules 4 mm. or more long.....3. P. lindeniana.

Leaves glabrous or sparsely pilose with hyaline hairs; stipules less than 3 mm. long..

Leaves 1 to 3 cm. wide, thin, usually ciliate, the cystoliths of upper surface linear or fusiform.

3 4. P. parietaria.

Leaves 3 to 5.5 cm. wide, thick, glabrous, the cystoliths of upper surface stellate-punctiform.

4 5. P. riparia.

Leaves (at least the larger of a node) ~~hoottandire~~.

Leaves 4 to 6-verticillate.....5. P. senarifolia.

Leaves in pairs.

Leaves pinnately 1-nerved.

Larger leaf crenate to middle, symmetrical at base.

6 7. P. pleuroneura.

Larger leaf 3-toothed at apex, oblique at base. 7 8. P. tridentata.

Leaves 3-nerved;

Leaves of a node dissimilar or very unequal, the larger more than twice the size of the smaller; plants glab throughout, or rarely sparsely pilosulous above.

8. Add imperfect in local. 186
Allen 2470 P. (2)

Smaller leaf less than 1.5 cm. ~~xiaax~~ long.

Larger leaf more than 3 cm. wide.....9. P. ecbolophylla.

Larger leaf less than 3 cm. wide.

Leaves cuneate at base; peduncles shorter than

petioles.....10. P. pansamalana.

11. P. divaricata

Leaves rounded at base; peduncles longer than

petioles.....~~11~~ 12. P. chiriquina.

Smaller leaf more than 1.5 cm. long.

13. Changeana

Leaves denticulate in upper third only. ~~12~~. P. caudata.

14. P. chiapensis

Leaves crenate or serrate to base.

cymose,

Staminate heads short (less than 1 cm.)-peduncled.

Leaves shallowly incurved-crenulate, thick, the

nerves inconspicuous beneath; achenes 1 mm.

15.

or less long.....~~13~~. P. costaricensis.

Leaves crenate-serrate, thin, the nerves conspicuous

beneath; achenes more than 1 mm. long.

16.

~~14~~. P. donnellsmithiana.

Staminate heads globose, on slender peduncles

more than 1.5 cm. long.

Stipules ~~persistent~~ 5 mm. long, obtuse, persistent;

cystoliths present on lower surface of leaf.

17.

~~15~~. P. cornmanae.

18. P. tiarensis

Stipules 2 mm. long, acute, deciduous; cystoliths

absent on lower surface of leaf.

19. ~~16~~. P. purulensis.

Leaves of a node similar, equal or the larger not more than

twice the size of the smaller; plants glabrous or

pubescent.

Stem and leaves both glabrous.

Peduncles of pistillate longer than the petioles.

Leaves broadly ovate or suborbicular; staminate heads 2 to 5-flowered, their peduncles shorter than the petioles.....14. P. dauciodora.

Leaves elliptical; staminate heads more than 5-flowered, their peduncles longer than the petioles.

18. P. gracilipes.

Peduncles of pistillate heads shorter than the petioles.

Leaves narrowly lanceolate, less than 1.5 cm. wide.

19. P. capillipes.

Leaves ovate to elliptic, more than 1.5 cm. wide.

Cystoliths on upper leaf-surface all stellate-punctiform.

Stipules deltoid, obtuse, 2mm. or less long; leaves thickened at margin.....5. P. riparia.

Stipules lanceolate, acute, 3 to 5 mm. long; leaves not thickened at margin.....20. P. irrorata.

Cystoliths of upper leaf-surface all linear or fusiform, or fusiform and punctiform intermingled,

Leaves coarsely crenate-serrate or serrate at least four-fifths their length from apex.

Cystoliths on upper leaf-surface both fusiform and punctiform, those on lower surface very numerous; nerves light-colored..21. P. pallida.

Cystoliths on upper leaf-surface all linear,
absent on lower; nerves dark. 29. P. quichensis.
Leaves finely serrulate, entire in lower third.
30. P. tuerckheimii.

Stem, leaf blades, or petioles pubescent.
Paduncles of pistillate heads longer than petioles.
Leaves pilose or strigillose with coarse hairs on upper surface.
Stem pubescent; pistillate inflorescence paniculate or cymose; achenes 0.5 mm. long or less.
Cystoliths present on both surfaces; pistillate infloescence paniculate, the peduncles usually long and slender....32. P. pubescens.
Cystoliths present on upper surface of leaves only at margin, conspicuous beneath; pistillate inflorescence in compact, nearly sessile cymes.
33. P. chrysosplenioides.
Stem glabrous; pistillate heads inflorescence subglobose; achenes 0.5 to 1 mm. long....36. P. auriculata.
Leaves glabrous on upper surface.
Leaves elliptic or ovate-elliptic, usually crowded at top of stem, tapering to a sessile or subsessile base; plants dioecious.
Segments of staminate flowers minute, filiform, glabrous.
37. P. ptericlada.
Segments of staminate flowers linear, conspicuous, hirsute.....28. P. fasciata.
Leaves ovate or lane-ovate, long-petioled, usually rounded

or subcordate at base; plants monoecious or dioecious.

Plants dioecious, the staminate and pistillate inflorescences similar, paniculate, borne in upper axils.

38. ~~29~~. P. acuminata.

Plants monoecious or dioecious, the staminate inflorescence compactly cymose, the pistillate diffusely paniculate.

Plants monoecious; achenes ovate, acute, ~~tuberculate~~ costate on both faces.

39. ~~30~~. P. pittieri.

Plants dioecious; achenes suborbicular, obtuse, ~~tuberculate~~ costate.

40. ~~31~~. P. standleyi.

Peduncles of pistillate ~~heads~~ inflorescence shorter than petioles; ~~plant~~ stems hyaline.....41. ~~32~~. P. hyalina. phenacoides

Start 1.
Leave no residual

(6)

Pilea peperomiaefolia Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 297. 1851.

/. Pilea microphylla (L.) Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 296. 1851.
Nat.
Parietaria microphylla L. Syst. ed. 10, 1308. 1759/

Urtica trianthemoides Swartz, Svensk. Vet. Akad. Handl. 8: 68. 1787.

Pilea muscosa Lindl. Coll. Bot. pl. 4. 1821.
Pilea trianthemoides Lindl. Coll. Bot. pl. 4. 1821.
Pilea portula Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 297. 1851.
glabrous throughout,
Succulent herb, 4 to 30 cm high, variable in size and habit; leaves usually crowded, short-petioled, obtuse or subacute at apex, tapering at base, entire, those of a pair unequal, the larger prevailingly obovate, up to and 4 mm wide,
10 mm long, the smaller orbicular or obovate-oroicular, up to 3 mm long, the upper surface of the blades transversely striate with linear cystoliths; plants monoecious, rarely dioecious, the flower clusters small, androgynous or unisexual, sessile or subsessile; achenes ovate, about 0.3 mm long.

Distribution: Throughout the American Tropics, from Mexico and southern Florida to Peru and northern Brazil, up to ~~1,800~~ 2,000 meters altitude; often cultivated.

(41) Guatemala: Seler 2494 (B, US).--- Petén: Walker (J.D.Smith 1094; US).--- Quiché: Río Copón, Skutch 1793 (US). San Miguel Uspantán, Heyde & Lux (J. D. Smith 3143; B, US). Chamá, H. Johnson 513 (US), 894 (US). Chamché, J. D. Smith 1670 (B, K, US). Cobán, Türckheim 752 (US), II.1312 (Brux, Gen, P, US).--- Retaluleu: Pueblo Nuevo, Tejas 273 (US).--- Santa Rosa: Heyde & Lux (J. D. Smith 4065; B, US).— Suchitepequez: Lower slopes of Volcan Zunil, Standley 35371 (F, US)

British Honduras: Schipp 1092 (Gen).

Honduras: Atlántida: Tela, Standley 53406 (US).

El Salvador: San Salvador: San Salvador, Standley 19237 (US), 19354 (US), 22409 (US); Calderón 572 (US); Velasco (J. D. Smith 8954; US).

Costa Rica: Polakowsky 416 (V). Tonduz 1795 (V), 17511 (US). Talamanca, Pittier in 1897 (US); Tonduz 9255 (Brux, US). Hacienda de Zent, United Fruit Company 273 (US).--- Cartago: Pejivalle, Standley 46725 (US). El Carmen, Torres 19 (US).--- Limón: Puerto Limón, Cook & Doyle 443 (US); Cufodontis 666 (V); Pittier 12693 (US). Corozal, Polakowsky 61 (B, BM, V).

(microphylla)

Panama: Bocas del Toro: Changuinola Valley, Dunlap 358 (US), 387 (US).--- Canal Zone: Fendler 259 (US). Piper 6017 (US). Standley 26888 (US), 28554 (US), 29384 (US), 30946 (US). ~~Pittier~~----- Colón: Porto Bello, Pittier 2447 (US).--- Panama: Panama, Heriberto 67 (US); Standley ~~26888 (US),~~ 29807 (US), 31834 (US). Chepo, Pittier 4460 (US).

This is the commonest species of Pilea in the Tropics. It grows in the crevices of stone walls and on rocks and in damp soil in forests. It is often cultivated as a border plant or grown in pots. The different habitats doubtless account for the variation in the habit and size of the plant and in the size of the leaves. The material cited above, however, is remarkably uniform, the leaves ~~xxxx~~ being rarely more than 4 mm long.

Local names: Lace plant; "palma del norte".

Pilea serpyllacea (H. B. K.) Liebm., a closely related species common in northwestern South America, has been collected in Mexico, and is reported from Costa Rica by Liebmann. It differs from P. microphylla is having the inflorescence borne on long, slender pedumcles, and usually the leaves are more orbicular.

(8)

2. Pilea herniarioides (Swartz) Lindl. Coll. Bot. under pl. 4. 1821.

Urtica herniarioides Swartz, Svensk. Vet. Akad. Handl. 8: 64. pl. 2, f. 1. 1787.

Pilea muscosa var. herniarioides Wedd. Arch. Mus. Hist. Nat. 9: 174. 1856-57.

Pilea microphylla var. herniarioides Wedd. in DC. Prodr. 16[1]: 106. 1869.

much-branched,
Slender, prostrate or creeping, glabrous herb, with a filiform stem; leaves of a pair subequal, orbicular or rhombic-orbicular, 1.5 to 5 mm long and wide, abruptly tapering to a filiform petiole subequal to or longer than the blade, the cystoliths filiform, slightly elevated on the upper surface, faint beneath; plants usually momoecious, the flower clusters androgynous or sessile in the axils of the upper leaves; unisexual; achenes ovate-elliptic, 0.4 to 0.5 mm long.

Distribution: Mexico and southern Florida to Colombia and British Guiana.

Honduras: Atlántida: Tela, Standley 53101 (US).

Costa Rica: Limón: Puerto Limón, Pittier 12693 (US).

Panama: Hayes 204 (K). Seemann 259 (K), 285 (K).--- ~~Panama: Corozal road, Standley 26866 (US).~~

probably true under microphylla p. 106

= hernandioides

3. Pilea deltoddea Liebm. Dansk. Vid. Selsk. Skrivt. V.,2: 298. 1851.

Stem slender, repent, glabrous, with a few or several branches, the mainly
leaves roulate at the end of the branches; leaves rotund-deltoid, 2 to 5
(or the lower petiolate),
mm long, 3 to 7 mm wide, rounded at the apex, subsessile, entire,
usually ciliate,
sparingly pilose above with hyaline hairs, glabrous beneath, the cystoliths
filiform, inconspicuous beneath; plants usually monoecious, the flowers densely clustered at the base of the leaves; achenes about 0.3 mm long.

Distribution: Guatemala, Costa Rican, and the West Indies., the type collected by Oersted on Mt. Aguacate.

alt. 1,000 meters.
Guatemala: Santa Rosa: Las Marías, Heyde & Lux (J. D. Smith 6234; B, BM, Bo, K, US).

Costa Rica: San Francisco de Guadalupe, alt. 1,150 meters, Pittier 7144 (US). — Curridabat, Pittier 3086 (US).

San José:

3.

4. Pilea parietaria (L.) Blume, Mus. Bot. Lugd. Bat. 2: ~~46~~ 48. 1856.

Urtica parietaria L. Sp. Pl. 985. 1753.

Urtica ciliaris L. Syst. Pl. ed. 10, 1266. 1759.

Pilea rubiaefolia Blume, Mus. Bot. Lugd. Bat. 2: 49. 1856.

Plant herbaceous or suffrutescent; stem simple or few-branched, glabrous; leaves of a pair (and especially the petioles) somewhat unequal, elliptic or ovate-lanceolate (rarely the lower broadly ovate), 2 to ~~4~~ 14 cm long, ~~1~~ 1.2 to ~~4~~ 6 cm wide, acuminate at apex, rounded or emarginate, rarely subacute, oblique at base, trinerved, membranous, the upper surface glabrous, or strigillose with pellucid hairs, the under surface glabrescent, or pubescent on the nerves, usually ciliate, the cystoliths linear or fusiform, usually inconspicuous; plants monoecious, ~~the inflorescences paniculate, androgynous~~ pedunculate, the inflorescences paniculate, androgynous, or the upper almost wholly staminate and the lower ~~paniculate~~ spicillate, achenes about ~~0.5~~ 0.5 mm long.

Distribution: Central America, at altitudes between 1000 and ~~1,200~~ 2,000 meters; also in the West Indies, the type from Jamaica.

Guatemala: Alta Verapaz: Rubelcruz, Türckhein 1270 (B, US).

Costa Rica: Vara Blanca, Maxon & Harvey 8255 (US), 8356 (US); Skutch 3143 (US). Valle de los Archangeles, Pittier 264 (Brux). Alajuelito, Pittier 2384 (Brux, US). Cerro de Carizia, Pittier 14046 (US). Vista de Mar, Jiménez 969 (US). San Juan, Tonduz 17950 (Gen, V). Las Concavas, Lankester 256 (K).--- San José: San José, Tonduz 10136 (US). Curridabat, Standley 41255 (US). Cerro de Piedra Blanca, Standley 32483 (US), 32587 (US). La Palma, Standley 32986 (US). Las Nubes, Standley 38822 (US). La Hondura, Standley 36186 (US), 37578 (US). Zurquí, Standley & Valerio 50855 (US).--- Río Reventado, Standley & Valerio 49578 (US). Cartago, Cooper (J. D. Smith 5948; US); Stork 369 (US).

5. Pilea riparia Donn. Smith, Bot. Gaz. 19: 11. 1894.

4.

Alta Verapaz and Baja Verapaz, Guatemala (type locality, Pansamalá, Department of Alta Verapaz) at altitudes of about 1,000 meters.

Plant throughout; glabrous; stem repent at base, ascending, 30 to 40 cm. high; leaves entire or shallowly serrulate toward the apex, tapering to a petiole 0.5 to 2.5 cm. long, the margin thickened, the larger of a pair oblong-elliptical, up to 15 cm. long, acuminate, the smaller obovate-elliptical, up to 9 cm. long, 2.5 to 4 cm. wide, abruptly acuminate, the cystoliths of the upper surface dense, stellulate-punctiform, those of the lower surface minute, linear and punctiform, those at the margin of both surfaces fusiform, more conspicuous; staminate cymes 4 to 4.5 cm. long, dichotomously branched; pistillate cymes short-peduncled or nearly sessile; achene narrowly ovoid, 1 mm. long, smooth.

5.

Ø. Pilea senarifolia Donn. Smith, Bot. Gaz. 19: 12. 1894.

Guatemala (type locality, Chiul, Quiché), altitude 2,500 meters.

Glabrous; stem succulent, 20 to 30 cm. high, rooting at base, 6-winged; leaves 4 to 6-verticillate, obovate-spatulate, 2 to 9 mm. long, 3 to 4 mm. wide, tapering to a petiole 1 to 2 mm. long, incurved-crenate above middle, the crenations 3 to a side, the upper surface transversely striate with narrowly fusiform cystoliths.

6.

Ø. Pilea pleuroneura Donn. Smith, Bot. Gaz. 19: 12. 1894.

Guatemala (type locality, Pansamalá, Alta Verapaz) at 1,175 meters altitude.

Stem rooting at woody base, ascending, 30 to 40 cm. high;

leaves of a pair slightly unequal, the larger lanceolate, 1.5 to 2.5 cm. long, 3 to 4 mm. wide, the upper half crenate with 3 to 5 crenations to the side, the lower half entire, cuneate, tapering to a petiole 3 to 4 mm. long, the smaller elliptical, 1 to 1.2 cm. long, 3 mm. wide, obtuse, entire or obsoletely lobed at the apex, cuneate at base, sessile, both bearing on upper surface linear cystoliths 0.2 mm. long; dioecious; pistillate cymes fascicled at ends of slender peduncles.

7.

8. Pilea tridentata Killip, Journ. Washington Acad. Sci. 15: 1925.

Guatemala (known only from type locality, Coban, Alta Verapaz).

Herbaceous or suffrutescent, 40 cm. or more, high; leaves sparsely covered with fusiform cystoliths beneath, crowded, penninerved, the larger leaves oblong-spatulate, 5 to 8 mm. long, the smaller ovate or suborbicular, 3 to 4 mm. long, 2.5 mm. wide, obtuse, sessile; dioecious; inflorescence cymose, 3 to 4-flowered, the peduncles of the staminate plants about 2.5 mm. long, slightly longer than those of the pistillate; achenes narrowly oblong, minutely roughened.

8. P. imparifolia Weddl. (in Fl. y Fauna)

9. Pilea ecbolophylla Donn. Smith, Bot. Gaz. 19: 10. 1894.

Alta Verapaz, Guatemala (type locality, Rio Dolores), along river banks at 350 meters altitude.

Rhizome 20 to 30 cm. long; stem erect, 30 to 35 cm. long; larger leaf of a pair obovate-elliptic or oblanceolate,

9 to 12 cm. long, 3 to 4.5 cm. wide, crenate-serrate to within 2 cm. from base, cuneate, tapering to a petiole 1 to 1.5 cm. long, caudate-acuminate, the tip 2 cm. long, the smaller leaf narrowly oblong-lanceolate, 7 to 8 mm. long, 2 to 3 mm. wide, incurved-crenate, the petiole 1 mm. long; dioecious; pistillate cymes 3 to 5 mm. long; achenes ovoid, 0.75 mm. long.

10. Pilea pansamalana Donn. Smith, Bot. Gaz. 19: 10. 1894.

Alta Verapaz, Guatemala (type locality, Pansamalá forest). Jan Kaun, Breas 4547 (F) [=Detmer. 44742 = Pulbrunn. Breas plant from Tuxtla]

Plants decumbent; leaves crenate-serrate, except at base, triplinerved (nerves impressed beneath), the cystoliths punctiform and linear, the larger leaves lanceolate-elliptic, linear-lanceolate or ovate, up to 2.5 cm. long and 2.5 cm. wide, rounded at apex, the smaller obovate or orbicular, 0.7 to 1.2 cm. long, 1 cm., or less wide, often oblique at base; monoecious or dioecious; staminate cymes borne on the lower naked portion of the stems, 1 cm. long; pistillate cymes axillary, 3 to 4 cm. long; achenes oblong.

11. Pilea *divaricissima* Killip (See p. 17)

N. Pilea chiriquina Killip, Journ. Washington Acad. Sci. 12-15: 291. 1925.

Panama (mountains of Chiriquí)

Plant suffrutescent, up to 60 cm. high; stipules deciduous; leaves crenate-serrate, dark green above, pale beneath, the larger ones oblong-lanceolate or oblanceolate, 4 to 5 cm. long, 1 to 2 cm. wide, caudate-acuminate, the

smaller ones ovate or ovate-lanceolate, 1 to 1.3 cm. long, less than 1 cm. wide, acute; dioecious; pistillate flowers in a compact, flat-topped cyme about 1 cm. wide, the perianth segments subequal.

13.Pilea caudata Killip, Journ. Washington Acad. Sci. 15: . 1925.

Not B. caudata H. Winkler, Bot. Jahrb. Engler 57: 514. 1922.
(This name is not in the Gray Card Catalogue but is in the Kew Index. We do not have Vol. 57 in our library. It is a New Guinean species. So P. caudata Killip needs a new name - E.P.K. 1952)

Guatemala (Department of Alta Verapaz).

Plant erect, simple, glabrous throughout; stipules deltoid; leaves thick, dark green above, paler beneath, bearing on both surfaces punctiform cystoliths, cuneate, the larger leaves lanceolate-elliptic, 10 to 15 cm. long, up to 4 cm. wide, caudate-acuminate, the smaller leaves narrowly lanceolate-elliptic, about 3 cm. long, 1 cm. wide, acuminate, entire or minutely serrulate at apex; staminate flowers in small axillary glomerules.

14. Pilea chiapensis Killip (see Fl. Guat.)

~~13.~~ Pilea costaricensis Donn. Smith, Bot. Gaz. 20: 294. 1896.
15.

Costa Rica (Provinces of Cartago and San José.

Plant up to 100 cm. high, branching toward summit; petioles 2 to 4 cm. long; leaves acute or obtusish at base, the larger oblong-elliptic or lance-elliptic, lance-elliptic, 10 to 20 cm. long, 3 to 6 cm. wide, caudate-acuminate, the smaller oblong-lanceolate, 2 to 2.5 cm. long, 1 to 1.3 cm. wide, the cystoliths linear; dioecious; staminate flowers in axillary, globose clusters or in short-peduncled flat-topped cymes, 2 to 2.5 cm. wide, the anthers exceeding

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the segments; pistillate flowers in cymes 5 to 6 mm. wide; achenes oval, 0.5 mm. long, smooth. Croat 5952 (Gen.)

Pilea diversissima Killip, sp. nov.

Dioica, glaberrima; stipulae triangulares, deciduae; folia valde inaequimagnia et dimorpha, cuiusque jugi majore lineari-lanceolato vel oblongo-lanceolato, attenuato-acuminato, serrato vel serrulato, trinervio vel subtriplinervio, petiolato, minore anguste spathulato vel anguste ovato; flores ♀ in cymis brevibus, achaenis ovatis.

Slender herb, repent on the branches of trees, glabrous throughout, much branched, the branches angular, densely covered with minute, linear and punctiform cystoliths; stipules triangular, 0.5 mm. long, soon deciduous; leaves membranous, dark green, densely covered above with punctiform and very short, linear cystoliths, at the margin the cystoliths larger and linear and fusiform, the under surface bearing inconspicuous punctiform cystoliths and sparingly black-punctate, the leaves of a node strongly unequal and dissimilar, the larger linear-lanceolate or oblong-lanceolate, 2 to 7 cm. long, 0.3 to 1.5 cm. wide, attenuate-acuminate, cuneate at the base, sometimes subfalcate, serrate or serrulate nearly to the base, with the teeth strongly ascending, trinerved or subtriplinerved (nerves reaching to the apex of the blade), petiolate, the petioles 2 to 10 mm. long, the smaller leaves narrowly spatulate or rarely narrowly ovate, 5 to 7 mm. long, 1 to 2 mm. wide, obtuse, sessile or tapering to a very short petiole, subentire or crenate-serrulate above the middle; plants dioecious; pistillate flowers in compact, sessile or subsessile cymes up to 5 mm. long, the perianth segments about 0.5 mm. long, the achenes ovate, about 0.8 mm. long.

Type in the herbarium of the Field Museum of Natural History, No. 853,546, collected in humid forest at Los Angeles de San Ramón, Costa Rica, altitude 1030 meters, July 11, 1926, by A.M.Brenes (no. 4851). Represented also by the following numbers of the same collector, from

this general region: 3786, 4010, 13198, 13511, all in the Field Museum. Two additional collections, both from the vicinity of Tilaran, (Brenes 15665 and Standley & Valerio 45409) belong to this species. What is probably a robust form of this, is represented in the U.S. National Herbarium by Standley & Valerio 49014, from the vicinity of Cairo, and Dunlap 471, from La Palma. In these the larger leaves are 8 to 15 cm. long and 1.5 to 3 cm. wide and the smaller ones up to 10 mm. long and 5 mm. wide.

The relationship of P. diversissima is with the Guatemalan P. panamalana Donn. Smith.

14. Pilea donnell-smithiana Killip, sp. nov.

Costa Rica; Panama (altitude 1,500 to 2,000 meters).

Erect herbs; about 1 meter high; stem simple or few-branched near base; stipules minute, triangular-ovate, soon deciduous; leaves ovate or elliptic, rounded or subauriculate and often oblique at base, faintly marked with minute linear cystoliths of both surfaces; the larger leaves 10 to 20 cm. long, 4 to 7 cm. wide, caudate-acuminate, their petioles up to 2.5 cm. long, the smaller leaves 1.5 to 3 cm. long, 1 to 1.5 cm. wide, acute, their petioles up to 0.5 cm. long; dioecious; staminate flowers in subglobose, distinct, usually pedicellate clusters in small axillary panicles 2 cm., or less, long; pistillate flowers in few-flowered, subglobose heads about 4 mm. wide, the segments unequal; achenes ovate, about 2.5 mm. long, strongly flattened.

donnell-smithiana

~~Costa~~ Branching herb, 3 ft. tall, low mt.

San Marcos: Finca El Porvenir, along Río Chipal, slopes of Volcan Tajumulco, 1300-1500 m, Steyer 37503 (F)

to Parto

?

donnelsmithiana ?
probably doesn't occur in Guat.

16. Piles cormmanae Killip, ~~sp. nov.~~ Journ. Wash. Acad. Sci. 15: 292. 1925.

Costa Rica; Panama (altitude 1,500 to 2,000 meters).

Plant herbaceous, erect, up to 60 cm. high, the stem branched, yellowish green, densely covered with elevated linear cystoliths; stipules orbicular or ovate; leaves coarsely serrate (teeth 2 to 3 mm. long, acutish), dark green above, paler beneath, densely covered on both surfaces with linear cystoliths, occasionally sparsely strigillose above with hyaline hairs; the larger leaves ovate-lanceolate, 3 to

7 cm. long, 1.5 to 3 cm. wide, acuminate, acute and often oblique at base, the petioles up to 4 cm. long, the smaller leaves broadly ovate or suborbicular, 1.5 to 2 cm. long, 1 to 1.5 cm. wide, acute, the petioles about 5 mm. long; monoecious (or dioecious?), the heads unisexual, the staminate and pistillate often borne at the same axil; staminate heads about 1 cm. wide, the peduncle up to 3 cm. long, the perianth segments long-caudate, erect; pistillate flowers loosely clustered in subglobose heads, on peduncles 5 to 7 mm. long; achenes broadly ovate or suborbicular, about 1 mm. long.

16. Pilea purulensis Donn. Smith, Bot. Gaz. 46; 115. 1908.

Guatemala (type locality, near Purulá, Department of Baja Verapaz, Guatemala), in mountain forests at 1,500 to 2,000 meters altitude.

Stem simple, 35 cm. high or more; leaves with minute linear cystoliths above, the larger leaves oblong-lanceolate, 10 to 15 cm. long, 4 to 6 cm. wide, long-acuminate, obtuse or acutish at base, the petiole up to 2.5 cm. long, the smaller ovate-lanceolate, acuminate, subrotund at the base, the petiole 1 to 2 mm. long; dioecious; staminate flowers in dense, globose heads; pistillate flowers in looser, short-peduncled, flat-topped cymes less than 1 cm. wide, the achenes ovate, 1 mm. long, slightly curved at apex.

17. Pilea dauciodora Wedd. Ann. Sci. Nat. III. Bot. 18; 223. 1852.

20. Pilea cornuto-cucculata Cuf.

21. Pilea ~~iraguana~~ feguinotii Cuf.

22. Pilea dauciodora (R. & P.) Wedd. Ann. Sci. Nat. III. Bot.18: 223. 1852.

Guatemala. West Indies, Colombia and Venezuela to Bolivia and Peru.

Stems repent, at length erect; stipules triangular-ovate; leaves up to 3.5 cm. long, and 2.5 cm. wide, obtuse or acutish, rounded or subcordate at base, crenate-serrate, (teeth usually mucronate, subimbricate), dark green above, paler beneath, bearing on both surfaces fusiform cystoliths; monoecious or dioecious; staminate inflorescence capitate, the peduncles filiform, 5 mm., or less, long; pistillate spikes simple or decompound, consisting in 2 to 6 globose clusters about 3 mm. wide, 8 to 20-flowered, the segments unequal; achenes ovate, 1 mm. long.

dauciodora

San Marcos: Bet. San Sebastián & San Marcos 2700-3800 m, Steyermark 35727 (F, MO).

Quezaltenango: Montaña Chicharro, slopes of Volcan Sta. María, 1400-1500 m, Steyerm. 34276 (F).

Jalapa: Vic. of Soledad, 2000-2400 m, Steyerm. 32647 (F)

23.

18. Pilea gracilipes Killip, Journ. Washington Acad. Sci. 15: 294. 1925. (24)

Costa Rica; Panama.

Stem repent, the branches erect, simple, up to 40 cm. high; stipules triangular-ovate, minute, deciduous; leaves 1 to 8 cm. long, 0.7 to 2.5 cm. wide, acuminate at apex, rounded or acutish at base, crenate-serrate, bright green above, paler and often glaucescent beneath, both surfaces bearing faint linear cystoliths, the leaves of a pair similar in form, subequal in size or the smaller three-quarters as long as the larger; plants monoecious or dioecious, the staminate and pistillate inflorescences often arising at the same axil; staminate flowers in globose heads 5 to 7 mm. wide, the peduncles filiform, 2 to 3.5 cm. long; pistillate flowers in

also in Guat. Lacaba; Steyer. 30017 (F, US)

see next page

23 Panama: Chiriquí: Monte Lirio, 1300-1400 m, Seibert 293 (Neo)

loose glomerules in interrupted spikes, or racemose-paniculate, the peduncles very slender, 2 to 7 cm. long; achenes lance-ovate.

Chiriquí: Bet. Boquete y Cerro Copete, 2300-2500 m, Woods & Schery 347 (Neo).

24. Pilea skutchii Killip, Fieldiana 24: 421. 1952. (See Fl. Guat.)

(See also next page)

25. Pilea quercifolia Killip, Phytologia 1: 146. 1936. (See also Fl. Guat.)

Picea obovata Ledeb. 4. rec.

~~Dioica~~ glehniana.

Herba tenuis, dioica; stipulae minutae, deciduae; folia inaequimagna sed similia, ovato-lanceolata, longe caudata, petiolata, grosse crenato-serrata, subtus pallida, cupolulithus linearibus vel angusta fusiformibus; pedunculi filiformes, petiolis brevores.

~~Haut~~

Slender ~~but, a~~ ~~dioecious~~ herb, up to 25 cm. high, repent toward the base, glabrous throughout; stipules minute, triangular, barely 0.5 mm. long; soon deciduous; leaves of a pair similar but unequal in size, the petioles very slender, the longer of a pair 1½-4 cm. long, the shorter a third to half as long, the blades ovate-lanceolate, 3-7 cm. long, 1-2 cm. wide (larger ~~leaf~~ pair, the smaller ones 1-2 cm. long, 0.5-1 cm. wide; extremes up to 12 cm. long and 5 cm. wide), caudate-acuminate, the (tip often nearly equal to the rest of the blade, subauriculate at the base, coarsely crenate-serrate, subtriplinerved (lateral veins arising near base of blade and extending to the lower part of the tip), membranous, pale beneath, the cupolulithus linear or narrowly fusiform, more conspicuous on the upper ~~surface~~ than on the lower surface; flowers dioecious, ~~both kinds of inflorescence erect~~, the staminate and the pistillate each borne

(skeletal)

on slender peduncles ~~the~~ which are shorter than the adjacent petioles, the capsules about 5 mm. wide, the staminate ones 5-7-flowered, the pistillate ones many-flowered; ~~staminate flowers subglobose in bud, pink, and~~

segments of the staminate flowers pink

staminate flowers about 1.5 mm. in diameter in bud, pink with green tips, the pistillate with ~~the~~ 3 minute segments; ~~of~~ achenes suborbicular, about 0.75 mm. long, compressed, ecostate.

Type in the U.S. National Herbarium, no. 1,637,897, collected on a mossy tree trunk in a ravine, Volcán, Zunil, Dept. of Quezaltenango, Guatemala, August 6, 1934, by Alexander F. Skutch (no. 974). Represented also by the following collections:

Dept. Quezaltenango: Along Quebrada San Jerónimo, Finca Pirineos, lower south-facing slopes of Volcán Santa María, between Santa María de Jesús and Calahuachá, alt. 1,300-2,000 m., Steyermark 33470.

Dept. San Marcos: Between Canjulá and La Unión Juárez, near northeast portion of Volcán Tacaná, alt. 2,000-3,000 m., Steyermark 36406. The leaves of this are considerably

(Skutchii)

large than in the two other collections.

Piba Skutchii belongs to the group of glabrous species with ~~similar leaves~~ the ~~leaf~~ leaves ~~of a pair~~ and ~~a node~~ similar, with peduncles shorter than the adjacent petioles. ~~It~~ Though probably most closely related to P. guianensis Aubl. Swith it differs in the much coarser texture of the leaves, the proportionately longer tips of the leaves and the filiform peduncles. It is, moreover, a far more delicate plant

San Marcos: Finca El Porvenir, sobre el Volcan Tajumulco, 1300-1500 m, Steyermark. 37521 (F, US).

15. Pilea quercifolia Killip, ~~sp. nov.~~, Phytologia 1:146. 1936. (Species Revisit, F.C. Gent.)

Plant glabrous throughout; stem repent at base, erect, about 20 cm high, simple or branched near apex, the lower leaves much reduced and soon deciduous, the lower intervals elongate, up to 5 cm long; stipules oblong-lanceolate, 4 to 5 mm long, 2 to 2.5 mm wide, subacute, soon deciduous; leaves of a node subequal and similar, the petioles 0.7 to 3.5 mm long, the blades ovate, 4 to 12 cm long, 2 to 5 cm wide, acuminate at apex, rounded or subauricular, sometimes oblique, at base, coarsely serrate-dentate from apex to base (teeth ascending, rounded), 3-nerved (lateral nerves extending to upper third of blade), thin-membranous, pale beneath, bearing on both surfaces obscure linear cystoliths; plants monoecious, the cymes unisexual; staminate cymes with filiform peduncles 2 to 4 cm long, 10 to 12-flowered, 8 to 10 mm wide, the flowers pedicellate, subglobose in bud and 2 to 2.5 mm in diameter, the segments oblong-lanceolate, about 1 mm long, dark green, pale at base; pistillate cymes borne at same axils with the staminate, on peduncles subequal to or slightly shorter than those of the staminate, 7 to 8 mm wide, the segments 3, markedly unequal, the middle one about 0.8 mm long, the lateral ones barely 0.2 mm long, the achenes lance-ovate, about 1 mm long, strongly flattened, obscurely costate on one face, smooth.

Type in the U. S. National Herbarium, no. 1,585,999, collected in deep ravine in dense forest, Chichavac, Department of Chimaltenango, Guatemala, altitude 2,400 to 2,700 meters, August 19, 1933, by A. F. Skutch (no. 559).

This is related to P. gracilipes Killip, a species common in Costa Rica and western Panama, the two having very similar floral characters. The proposed species is, however, readily distinguished by the larger, proportionately broader leaves with much larger teeth, the toothing, indeed, being more pronounced than in any other species with which I am familiar. In general outline the leaves resemble those of Quercus prinus.

19. Pilea angustifolia Killip, Journ. Washington Acad. Sci. 15: . 1925.
26.

30

Costa Rica (type locality, Reventazón Valley.

Stem repent below, at length erect, simple or few-branched, up to 50 cm. high; stipules deltoid, deciduous; petioles enlarged at base, those of a pair usually unequal; leaves 4 to 10 cm. long, those of a pair similar in shape, subequal in size (or the one four-fifths as long as the other), acuminate at apex, narrowed to a cuneate or subcordate base, serrulate, bearing on both surfaces minute linear cystoliths; monoecious; staminate flowers densely congested in globose heads nearly 1 cm. in diameter, the peduncles very slender, filiform, 3 to 4 cm. long, the pedicels 1 to 1.5 mm. long; pistillate flowers in sessile cymes 3 to 5 mm. wide.

no loc. C R Brenes 4001 (F).

30. Pilea irrorata Donn. Smith, Bot. Gaz. 19: 11. 1894. (31)

Guatemala (type locality, Río Samalá, Department of Retalhulen) at altitudes of 500 to 550 meters, pendent from cliffs, Costa Rica? Mexico (Chiapas).

Stems stout, 30 to 60 cm. high; leaves ovate-lanceolate or broadly elliptic, 10 to 25 cm. long, 4 to 10 cm. wide, caudate-acuminate, subcuneate at base, irregularly and shallowly crenate-serrulate, above the middle; monoecious or dioecious;

(Continued on next page)

irrorata
Guat.

Izabal: Across bay from Pto. Barrios, 20-50 m., Steyerm. 39854(F).

San Marcos: Lower slope of Volcan Tajumulco, 1300-1800 m, Steyerm. 37227(F), 37496(F)

Quezaltenango: Río Samalá, bet. Sta Maria de Jesús & Calahuacalé, 1200-1300 m, Steyerm 33897(F),

inverta

staminate spikes nearly sessile, densely flowered, borne in the axils of the lower leaves; the pedicels 4 to 5 mm. long; pistillate cymes compact, borne in the axils of the upper leaves.

24.
~~21.~~ Pilea pallida Killip, Journ. Washington Acad. Sci. 15: 1925.

Guatemala (type locality, Sibubi Falls, Sixaola Valley.

Stem simple, 30 cm., or more, high; stipules lanceolate; petioles 1.5 to 4 cm. long; leaves elliptic-lanceolate, 8 to 12 cm. long, 3 to 4 cm. wide, caudate-acuminate, tapering to petiole, densely covered with fusiform and punctiform cystoliths, slightly silvery-lustrous beneath; dioecious; staminate flowers densely congested in sessile subglobose clusters; pistillate flowers in much-branched, flat-topped cymes, shorter than the petioles, about 1 cm. long, 1.2 cm. wide, in the axils of the upper leaves; achenes ovoid, about 1 mm. long, acute, wing-margined, the surface black, minutely papillose.

23.
~~22.~~ Pilea quichensis Donn. Smith, Bot. Gaz. 19: 12. 1894.

Guatemala (type locality, San Miguel, Uspantán, Department of Quiché).

Stem simple, 60 to 90 cm. high; leaves obliquely oblong-elliptic, 10 to 15 cm. long, 2.5 to 4 cm. wide, caudate-acuminate, acute at base, serrate, the upper surface dark green covered with minute, linear cystoliths, the under surface

glaucescent, destitute of cystoliths; monoecious; staminate cymes up to 2 cm. long, the flowers on spreading branches, the perianth segments obtuse; pistillate cymes smaller, borne at the uppermost axils.

30. Pilea kelleyiana Standley. (See Fl. Zonat.)

~~25~~. Pilea tuerckheimii Donn. Smith, Bot. Gaz. 46: 116. 1908.
31.

Guatemala (type locality, Cobán, Department of Alta Verapaz), Costa Rica.

Stem repent, the branches erect, 30 to 50 cm. high; leaves elliptic-lanceolate, up to 16 cm. long, 2.5 to 4 cm. wide, acute at base,)petioles up to 8 cm. long), falcate-acuminate at apex, both surfaces bearing linear cystoliths; dioecious; staminate cymes dichotomous, diffuse, shorter than the petioles; pistillate cymes up to 3 cm. long, in the upper axils, dichotomous; achenes ovate, smooth, the beak curved, winged at margin.

Salvadora: Slopes of Volcan Tajumulco (1300-1500 m), Steyer. 37482 (F, US)

32
~~34~~. Pilea pubescens Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 302. 1851.

Adicea pubescens Kuntze Rev. Gen. 2: 623. 1891.

Guatemala; Honduras; Costa Rica; Panama. Mexico. West Indies. South America.

Sten repent, the branches ascending, up to 30 cm. high; leaves ovate or nearly orbicular, up to 5 cm. long and 4 cm. wide, the upper approximate and the larger, the lower remote, often much the smaller, obtuse or shortly caudate-acuminate at apex, cordate, rounded, or rarely acutish at base, coarsely

Talamanca, Brenes 15663 (F)
San Ramon " 16142 (F).

Julocaceae C.R Trias, Jordan 11439 (Nat. Fauna) (34)

serrate or crenate-serrate, often ciliate, the upper surface sparsely strigillose with hyaline hairs and bearing minute linear cystoliths, the lower pubescent, especially on the nerves; monoecious; the cymes up to 5 cm. long, rarely longer, androgynous, the pistillate flowers in numerous glomerules on divergent slender branches, the staminate few-clustered at the bases of the branches; achenes minute, ovate.

pubescens

Chiquecimula: Montaña Monojá, 3-5 mi. east of Camotán, 1000 - 1500 m, Steyerm. 31704 (F, US)

Quezaltenango: Quebrada San Jerónimo, slopes of Volcán Santa María, 1300 - 2000 m, Steyerm. 33308 (F).

33. Pilea involucrata (Sims) Urban, Symb. Ant. 1:298. 1899

25. Pilea chrysosplenioides Wedd. Ann. Sci. Nat. III. Bot. 18: 213. 1852.

Artica involucrata Sims, Bot. Mag. 51: pl. 2451. 1824.
Pilea ovalis Griseb. Fl. Brit. W. Ind. 158. 18 .

Panama. Colombia to Trinidad.

Stem decumbent, the branches ascending, up to 25 cm. high; leaves ovate or obovate, 1.5 to 4 cm. long, 1 to 2 cm. wide, rounded at apex, short-petioled, finely crenate, glabrous or sparsely strigillose above, ciliate at margin, densely strigillose beneath, nearly destitute of cystoliths above, except toward margin, bearing numerous linear cystoliths beneath; plants monoecious or dioecious, the inflorescences unisexual, compact, shorter than leaves; achenes minute, less than 0.5 mm. long.

34. Pilea nummulariifolia (Sw.) Wedd.
(See Fl. Panama MS)

35. Pilea rugosissima Killip (" " " ")

36.

86. Pilea auriculata Liebm. Dansk. Vid. Selsk. Skrivt. V. 2:

299. 1851.

(36)

Adicea auriculata Kuntze Rev. Gen. 2: 622. 1891.

Costa Rica. (also Ho Guat.)

Stem repent, the branches ascending, 8 to 25 cm. high,

very slender; stipules ovate, 4 to 5 mm. long, persistent;

Palmira del Naranjo, Brenes 3498(F). La Palma, Brenes 3714(F)

(Descubierta antes en Guatemala)

auriculata (Guat. ...) Go

Cerro Marazon: abunde Fuera de Potrero, bosque

alrededores de Valencia Tajumulco, 1300-1570 m.

Stevens. 37327(F,US). Valle Jacaro, # 2504-

bosque, Stevens. 36349(F,US). Rio Negro, Volcan

Tajumulco, 1300-1700 m, Stevens 37693(F,US)

abunde Barranco Eminencia, 2700 m,

Steadley 6849(F),

Zacapa: Sierra de Las Minas, 2000 m, Stevens.

30919(F),

leaves rotund-rhombic, 0.8 to ~~1.6~~ 2.0 cm. long and wide, (rarely up to 25 mm.) coarsely crenate, cuneate at base, often strikingly bicolored, both surfaces sparsely covered with linear and fusiform cystoliths, strigillose with a few hyaline hairs above; monoecious; staminate heads 2 to 3-flowered, the peduncles 1.5 mm. long; pistillate spikes globose, the peduncles slender, 1 to 1.5 cm. long, the middle perianth segments auriculate; achenes ovate.

32. Pilea pteriolada Donn. Smith, Bot. Gaz. 31: 121. 1901.

Costa Rica (type locality, Atirro, Province of Cartago) in forests at low altitudes of 100 to 600 meters.

Stem repent, ~~rooting~~, woody, the branches erect, 5 to 12 cm. high, glabrescent ~~or pubescent at nodes~~; leafy at summit; petioles up to 1 cm. long, usually pubescent; leaves elliptic or oblong-elliptic, 5 to 10 cm. long, 2 to 4 cm. broad, acuminate at apex, crenate-serrate, the upper surface bearing minute fusiform punctiform cystoliths, the lower surface glabrate, or ~~brown-tomentulose on nerves~~; dioecious; staminate inflorescence paniculate, the peduncles up to 2.5 cm. long; pistillate spikes (including peduncle) 3.5 to 7 cm. long, pyramidal; achenes ovate.

28. Pilea fasciata Weed. in DC. Prodr. 16¹: 149. 1869.

Panama. Western Colombia.

Plants robust, 10 to 15 cm. high; leaves ovate or obovate, up to 12 cm. long, 5 cm. wide, acute at apex, narrowed to a subauricular base, coarsely crenate-serrate, triplinerved,

glabrous above, pubescent on nerves beneath, bearing numerous punctiform and a few linear cystoliths above, the cystoliths obsolete beneath; plants dioecious, the staminate and pistillate heads both borne in axils of the upper leaves, subcorymbose; perianth of staminate flowers turbinate pale, the segments linear, 1 cm. long, pubescent, dark green; achene 0.5 mm. long.

The occurrence of P. fasciata within the area is based on a specimen in the herbarium of the New York Botanical Garden, collected at Cana, Panama, by Williams (no. 810). The foliage much resembles that of P. pteriolada but the staminate flowers are quite different. The plant in general answers the description of P. fasciata, from the contiguous part of Colombia, of which only the pistillate inflorescence is known.

38

Dansk

~~32~~. Pilea acuminata Liebm. Vidensk. Selsk. Skr. V. 2: 302. 1851.

Costa Rica. Mexico, Colombia.

Stems ascending; leaves ovate or ovate-elliptic, up to 15 cm. long, 7 cm. wide, long-acuminate, subcordate, coarsely crenate-dentate, brown-pubescent on nerves beneath, often ciliate at margin, bearing minute fusiform and linear cystoliths on both surfaces; plants dioecious; staminate and pistillate inflorescences similar, both diffusely paniculate, borne in axils of upper leaves up to 10 cm. long, slender-peduncled; achenes about 0.5 mm. long.

39.
SQ. Pilea pittieri Killip, Journ. Washington Acad. Sci. 15: 298. 1925.

Costa Rica. (Province of Ceintago and San José).

Decumbent or erect herbs, up to 40 cm. high, the stem simple or few-branched, glabrescent below, sparingly pubescent above, densely marked throughout with linear cystoliths; stipules linear-oblong, obtuse, deciduous; petioles 1 to 5 cm. long, those of a pair subequal (or one 2 or 3 times as long as the other); leaves ovate or ovate-lanceolate, 3 to 10 cm. long, 1.6 to 7 cm. wide (those of a pair similar but slightly unequal), long-acuminate at apex, rounded or subcordate at base, serrate or serrate-crenate nearly to base, marked on both surfaces with linear cystoliths; beneath densely pubescent on nerves and veins and punctate on veins; monoecious (or occasionally dioecious?); staminate cymes solitary in the axils of the lower leaves or at the leafless nodes of the rooting portion of the stem, subsessile or short-peduncled; densely flowered, the perianth segments linear-spatulate, 2 to 3 mm. long, 1 mm., or more, wide; pistillate spikes solitary in the axils of the upper leaves, 4 to 5 cm. long, the peduncles slender, 2 to 4-forked, the flowers borne in subglobose clusters, the perianth segments unequal; achenes 1 mm. long.

40.
31. Pilea standleyi Killip, Journ. Washington Acad. Sci. 15:
. . 1925.

Costa Rica (type locality Las Nubes, Province of San José).

Decumbent herbs, the stem at length ascending to about 20 cm., glabrescent below, pubescent above, particularly at the nodes; stipules suborbicular, 3 to 4 mm. long, rounded, persistent; petioles up to 3 cm. long, densely pubescent, those of a pair subequal; leaves ovate-elliptic, 2 to 6 cm. long, 1.5 to 3 cm. wide, acute at apex, rounded or acutish at base, crenate-serrate nearly to base, densely pubescent beneath on the nerves, bearing numerous linear cystoliths on both surfaces; dioecious; peduncles of pistillate inflorescence up to 5 cm. long, in the axils of the upper leaves, slender, dichotomous, the flowers borne in contiguous clusters at the ends of the branches, the perianth segments unequal; achenes about 0.8 mm. long, narrowly wing-margined.

41. Pilea phenacoides Killip, See Fl. Costa Rica
32. Pilea hyalina Fenzl, Denkschr. Akad. Wiss. Math. Naturw.
42. (Wien) 1: 4. .

Pilea lundii Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 299. → Keep out of synonymy
1851. a year

Adicea hyalina Kuntze Rev. Gen. 2: 622. 1891.

Adicea lundii Kuntze Rev. Gen. 2: 623. 1891.

Guatemala; Honduras; Costa Rica; Panama. South America (type locality, Brazil).

Stem erect or subrepent at base, simple or branched,

8 to 40 cm. high, glabrous, succulent; stipules minute, deciduous; petioles up to 4 cm. long, those of a pair subequal or the one twice as long as the other; leaves spreading, rhombic-elliptic, or ovate, 1 to 6 cm. long, 0.8 to 3.5 cm. wide, broadest slightly below middle, cuneate, coarsely serrate, glabrous or sparsely pellucid-strigillose above, the cystoliths linear, inconspicuous; monoecious; spikes 2 to 4 in the axils of nearly all the leaves, up to 2.5 cm. long, androgynous, the staminate flowers very few, the pistillate flowers closely congested in numerous subcontinuous glomerules; achenes ovate, 0.4 mm. wide.

Because of similarity in the foliage this species is often confused with the North American Pilea pumila. The achenes of the latter are, however, more than twice as long as those of P. hyalina. Pilea lundii apparently is merely a small-leaved form of P. hyalina.

Klayeme. 43650 Ba long 0 = cuneate

3. HEMISTYLIS Benth. Pl. Hartweg. 123.

Shrubs or low trees; leaves alternate, petiolate, entire or toothed; flowers monoecious; staminate flowers with a 4-parted perianth; pistillate flowers tubular, contracted at the 4-toothed apex, the style deciduous.

Hemistylis odontophylla Wedd. in DC. Prodr. 16[1]: 235[53]. 1869.
Guatemala. Venezuela (type locality).

Leaves broadly ovate up to 20 cm. long, 15 cm. wide, dentate except at base, strigose-hispid above, softly pubescent beneath; staminate flowers in small contiguous clusters in a slender spike up to 25 cm. long; pistillate flowers subtended by conspicuous lanceolate bracts, in a pyramidal panicle.

4. PARIETARIA L. Sp. Pl. 1052. 1753.

1. Parietaria debilis Forst. Fl. Ins. Austr. Prodr. 73. 1786.

Guatemala. Widely distributed in both hemispheres.

Annual herb, erect or diffuse, pilosulous or glabrescent; leaves ovate, rhombic-ovate, or suborbicular, 1 to 2 cm. long, occasionally longer, entire, thin; bracts linear or narrowly lanceolate; flowers polygamous, in axillary cymes.

5. Phenax Wedd. Ann. Sci. Nat. IV. 1: 191. 1854.

Shrubs or suffrutescent herbs; leaves alternate, petiolate, toothed; stipules free; flowers monoecious, in dense axillary clusters, the bracts broad, brown, scarious; staminate flowers with a 4 (3 or 5)-lobed perianth; ovary sessile within a bract; stigma elongate, persistent.

Leaves narrowly lanceolate, minutely serrulate above middle, thin, the lateral nerves extending to apex of blade. 1. P. angustifolius.

Leaves broadly ovate to lance-oblong, coarsely or finely crenate, the lateral nerves extending not more than to upper third or blade.

Leaf blades thick, finely and closely crenate.

Leaves ovate to lance-oblong, flat, glabrescent or hirtellous on the nerves beneath. 2. P. mexicanus.

Leaves broadly ovate, strongly rugose or bullate above, densely hirsute beneath. . 3. P. rugosus.

Leaf blades thin, coarsely crenate. 4. P. hirtus.

1. Phenax angustifolius (H. B. K.) Wedd. Ann. Sci. Nat. IV. 1: 191. 1854.

Boehmeria angustifolia H. B. K. Nov. Gen. & Sp. 2: 34. 1817.

Costa Rica, Panama. Colombia.

Shrub; leaves 5 to 15 cm. long, up to 2.5 cm. wide,

long-acuminate, glabrous above, sparsely strigillose beneath; flowers dioecious; achenes minute, granular, the persistent style 4 to 6 mm. long.

2. Phenax mexicanus Wedd. Ann. Sci. Nat. IV. 1: 193. 1854.

Phenax gaudichaudianus Wedd. Ann. Sci. Nat. IV. 1: 193. 1854.

Phenax selecttianus Blume, Mus. Bot. Lugd. Bat. 2: 227. 1856.

Guatemala to Panama (Province of Chiriquí). Mexico.

Shrub, 1 to 2.5 meters high, glabrescent; leaves bright green; flower clusters androgynous or unisexual; bracts ovate, usually ciliolate above.

3. Phenax rugosus (Poir.) Wedd. in DC. Prodr. 16¹: 235[38]. 1869.

Procris rugosa Poir. in Lam. Encycl. 5: 628.

Boehmeria rugosa Pers. Synops. 2: 556. 1807.

Boehmeria ballotaefolia H. B. K. Nov. Gen. & Sp. 2: 35. 1817.

Guatemala to Panama (Prov. of Chiriquí). Mexico; Colombia and Ecuador.

Shrub, 2 to 3 meters high; leaves acute or acuminate, sparsely pilosulous or glabrate above, often strongly scabrous, grayish appressed-hirsute beneath; flower clusters numerous, approximate, up to nearly 1 cm. in diameter; achenes smooth, verrucose at margin, the persistent style about 2 mm. long.

4. Phenax hirtus (Swartz) Wedd. in DC. Prodr. 16¹: 235[38]. 1869.

Urtica hirta Swartz, Fl. Ind. Occ. 1: 285. 1797.

Erect or decumbent suffrutescent herb, up to 2.5 meters high; leaves ovate, up to 12 cm. long, 6 cm. wide, acuminate, often sparingly hispid above, glabrous or hirtellous beneath; flower clusters androgynous.

6. Myriocarpa Benth. Bot. Voy. Sulph. 168. 1844.

Trees or shrubs; leaves alternate, dentate or subentire, pinnately veined or 3-nerved; stipules connate; flowers greenish, usually dioecious, closely aggregated in long slender, branched spikes or racemes, or subpaniculate; staminate flowers with a 4 (rarely 3 or 5)-parted perianth; achene ovate or elliptic, compressed, often ciliate.

Leaves obovate or elliptic, rarely more than 7 cm. wide, thick, the cystoliths irregularly massed over the upper surface.

Pistillate inflorescence paniculate, the ultimate branches short; achenes long-ciliate. 1. M. obovata.

Pistillate inflorescence in long pendulous racemes; achened eciliate or sparingly short-ciliate.

2. M. heterostachya.

Leaves ovate or broadly ovate, usually more than 10 cm. wide, thin, the cystoliths of upper surface radiating from the center of areoles.

Plants dioecious, or if rarely monoecious, the spikes unisexual.

Achenes ~~long~~-ciliate, narrowed to an evident stipe; bracteoles divaricate. 3. M. longipes.

Achenes eciliate, ~~hardly~~ narrowed at base; bracteoles appressed. 4. M. yzabalensis.

Plants monoecious, the spikes androgynous. 5. M. bifurca.

1. Myriocarpa obovata Donn. Smith, Bot. Gaz.

Myriocarpa paniculata Blake, Contr. Gray Herb. n. ser. 52: 61. 1917.

Honduras, Nicaragua, Salvador.

Shrub, about 3 meters high; leaves obovate or oblong-obovate, up to 16 cm. long, 6 cm. wide, abruptly acuminate at apex, acute at base, subdenticulate or nearly entire, 3-nerved, glabrous; plants dioecious; panicle (of pistillate inflorescence) up to 7 cm. long; achenes about 8 mm. long, stipitate, ciliate. Schiff 869 (Sen), Bot. Gaz.

2. Myriocarpa heterostachya Donn. Smith, Bot. Gaz.

Myriocarpa heterospicata Donn. Smith,

Guatemala (Dept. of Alta Verapaz).

Shrub, 3 to 4 meters high; leaves lanceolate or elliptic-lanceolate, 5 to 15 cm. long, 3 to 7 cm. wide, occasionally larger, entire or rarely finely callous-serrulate, glabrous, pubescent on veins beneath; plants monoecious, the spikes unisexual; staminate spikes (apparently few to a plant) up to 7 cm. long, once furcate; pistillate spikes slender, up to 20 cm. long, once furcate near base; achenes elliptic, conspicuously stipitate, sparsely strigillose.

Tonduz 11313 (Sen)

Gf 5 16,43 (Sen

3 Myriocarpa longipes Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 306. 1851.

Myriocarpa colipensis Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 306. 1851.

Guatemala, Salvador, Costa Rica. Mexico. (Urtic. Zin. acc. to Smith)

Shrub or tree, 3 to 6 meters high; leaves 10 to 30 cm. long, 3 to 15 cm. wide, closely denticulate, rounded at base, often rugulose and scabrous above, densely appressed-pubescent on the nerves beneath; plants dioecious (or rarely monoecious?) the spikes long and slender, once or twice forked near the base; achenes elliptic, 1 to 1.5 mm. long.

4. Myriocarpa yzabalensis (Donn. Smith) Killip.

Myriocarpa longipes yzabalensis Donn. Smith, Bot. Gaz. 16: 13. 1891.

Add El Cayo, Brit. Hond. Lundell 2223 (Mich.)

Guatemala to Panama.

Shrub or small tree, 2 to 6 meters high, similar to the preceding species; spikes long-pendent; achenes sessile, scabrous with short white hairs, ciliate. Tonduz 13722 Jacoyar (Gen.)

5. Myriocarpa bifurca Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 307. 1851.

Just Nicaragua.

Leaves ovate, rounded at base, denticulate or repand-crenulate, slightly bullate above, short-pubescent, at length glabrescent; plants monoecious, the spikes bifurcate, up to 12 cm. long, the staminate and pistillate flowers intermingled; bracteoles divaricate; achenes ciliate.

Keys to 3 common species of Meyriocarpa

Achenes stipitate, ciliate . . . . . 1. M. stipitata.

Achenes sessile.

Achenes ciliate . . . . . 2. M. longipes

Achenes sciliate, scabrid on faces
with sparse short hairs . . 3. M. yzgabalensis

7. URERA Gaud. in Freyc. Voy. Bot. 496. 1826.

Trees or shrubs, usually with stinging hairs; leaves stipulate, petioled, the cystoliths punctiform, linear, or wanting; flowers usually dioecious, small, green, in axillary panicles; staminate flowers with a 4 or 5-parted perianth and 4 or 5 stamens; pistillate flowers with 4 equal or unequal segments; stigma persistent; achene straight or oblique, surrounded by the fleshy perianth and resembling a berry.

Leaves incised-lobed usually more than halfway to midrib.

1. U. laciniata.

Leaves not lobed, dentate, crenate, or subentire.

Achene more than 2 mm. long, exceeding the calyx; leaves coarsely dentate. 2. U. baccifera.

Achene less than 2 mm. long; leaves crenate-dentate to subentire.

Leaves broadly ovate to orbicular-ovate, usually cordate at base. 3. U. caracasana.

Leaves rhombic-elliptic to elliptic-oblong, rounded at base.

Cystoliths on upper surface of leaves oblong, conspicuously radiant from the center of areoles. 4. U. alcesefolia.

Cystoliths on upper surface of leaves punctiform, uniformly scattered over surface. 5. U. elata.

1. Urera laciniata Wedd. Ann. Sci. Nat. III. Bot. 16: 203. 1852.

Urera girardinioides Seem. Bot. Voy. Herald 194. 1854.

Costa Rica, Panama. ~~Colombia to Peru.~~

Tree, 3 to 4 meters high, the branches densely covered with stoutish bristles; leaves 15 to 30 cm. long, 4 to 5-lobed; flowers dioecious, the panicles equaling or longer than the petioles; staminate flowers sessile in compact glomerules, the perianth 3-parted; pistillate flowers subsessile on the branches or in few-flowered clusters, the perianth unequally 4-lobed; achenes orbicular-ovate, 2 mm. long.

2. Urera baccifera (L.) Gaud. in Freyc. Voy. Bot. 497. 1826.

Urtica baccifera L. Sp. Pl. ed. 2. 1398. 1763.

Urera grandidentata Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 296. 1851.

Urera baccifera angustifolia Wedd. in DC. Prodr. 16[1]: 94. 1869.

Throughout Central America. Southern Mexico, West Indies, and South American.

Shrub or small tree, 2 to 7 meters high, covered with stout stinging prickles; leaves oval or round-cordate, rarely lanceolate-oblong, up to 35 cm. long, acute or acuminate, rounded or subcordate, rarely scutish, at base, flowers dioecious, in much-branched cymes, the branches reddish; fruit ~~juicy,~~ white or rose-colored, 3 to 5 mm.

long. "Chichicaste" (Guatemala); "Cluchicaste nigua" (Salvador); "ortiga" (Panama).

See U. caracasana in J.v.S. Linn. fl. Panama 204

3. Urera caracasana (Jacq.) Griseb. Fl. Brit. W. Ind. 154. 1859.

Urtica caracasana Jacq. Pl. Hort. Schönbr. 3: 71. pl. 386. 1798.

? Urtica corallina Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 295. 1851.

Urtica verrucosa Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 295. 1851.

Urera jacquini Wedd. Ann. Sci. Nat. III. Bot. 18: 200. 1852.

Urera caracasana tomentosa Wedd. in DC. Prodr. 16¹: 90. 1869.

? Urera corallina Wedd. in DC. Prodr. 16¹: 90. 1869.

Urtica chichicaztli Sessé & Moc. Pl. Nov. Hisp. 160. 1887.

Throughout Central America. Mexico, West Indies, and South America.

Shrub or small tree, 3 to 6 meters high, usually armed with slender stinging hairs; leaves acute or acuminate, crenate-dentate, sparsely or densely pubescent, often bullate above; flowers dioecious or rarely monoecious; cymes regularly dichotomous, the flowers borne in usually dense clusters; pistillate flowers usually pedicellate, the unequal perianth-segments white-punctate, rough; fruit bright red at maturity. "Chichicaste" (Guatemala, Nicaragua, Salvador); "ortiga" (Costa Rica).

4. Urera alceaefolia Goud.

496.

Guatemala, Costa Rica, Panama, Mexico.

Shrub 2 to 6 meters high, usually armed with stinging hairs; leaves rhombic-elliptic to elliptic-oblong, up to 30 cm. long, acuminate at apex, acutish or subrotund at base; panicles rarely more than 5 cm. long, the flowers in dense clusters; fruit bright red when ripe.

This may be only a form of U. carnea<u>ana</u>.

Pitt. 2939 and 5,100 + 4-100

5. Urera elata (Sw.) Griseb. Fl. Brit. W. Ind. 154. 1859.

Urtica elata Sw. Prodr. 37. 1788.

Urera sinuata Wedd. Ann. Sci. Nat. III. Bot. 18: 201. 1852.

Guatemala, Costa Rica, Panama. Jamaica.

Shrub or tree, up to 3 meters high (perhaps taller), with a few stinging hairs or almost glabrous; leaves ovate or ovate-oblong, up to 20 cm. long and 10 cm. wide, sinuate-crenulate or subentire toward apex, the young leaves often with a few stinging hairs on upper surface, and appressed hairs beneath, at length glabrescent.

See sketch 2863 and enlargement

8. GYROTAENIA Griseb. Fl. Brit. W. Ind. 155. 1859.

1. Gyrotaenia microcarpa (Wedd.) Pawc. & Rendle Fl. Jamaica 3: 56. 1914.

Urera microcarpa Wedd. Arch. Mus. Paris 9: 156. 1856-57.

Panama. Mexico; Jamaica (type locality).

Shrub or small tree, up to 20 ft. high, with stinging hairs; leaves elliptic-oblong, 5 to 10 cm. long, entire or sinuate, puberulous or glabrescent; flowers dioecious, sessile, crowded in subcontiguous clusters in axillary panicles; staminate flowers with a 4-parted perianth; pistillate flowers with a 2-lobed perianth; achenes ovate, exceeding the perianth lobes.

Bard

9. FLEURYA Gaud. in Freyc. Bot. Voy. 497. 1826.

Annual herbs, usually with stinging hairs; leaves petioled, toothed; flowers monoecious or dioecious, in small clusters on paniculate cymes, the staminate with a 4 or 5-parted perianth, the pistillate with 4 imbricate segments and a hooked stigma; achenes oblique.

1. Fleurya aestuans (L.) Gaud. in Freyc. Bot. Voy. 497. 1826.

Urtica aestuans L. Sp. Pl. ed. 2, 1397. 1763.

Urtica latifolia Rich. Act. Soc. Hist. Nat. Paris 1: 113. 1792.

Urtica nemorosa H. B. K. Nov. Gen. & Sp. 2: 42. 1817.

Fleurya glandulosa Wedd. Ann. Sci. Nat. III. Bot. 18: 205. 1852.

Fleurya aestuans racemosa Wedd. in DC. Prodr. 16[1]: 72. 1869.

Nicaragua, Costa Rica, Panama. West Indies, tropical South America. Africa.

Erect or ascending, up to 1.2 meters high, glabrous or pubescent, often glandular, usually with stinging hairs; leaves broadly ovate, up to 15 cm. long, 12 cm. wide, acute or acuminate, subcordate at base, sharply dentate; panicles androgynous, elongate, slender-peduncled, the flower clusters usually androgynous; achenes ovate.

Chiriquí: Pto. Armuelles, 0-75 m, low forest
+ Seibert 849 (MO)

10. URTICASTRUM Fabr. Pl. Hort. Helmst. 204. 1759.

Laportea Gaud. in Freyc. Voy. Bot. 496. 1826.

Shrubs or small trees; plants monoecious or dioecious; flowers in glomerules, forming unisexual panicles, the masculine panicles (in monoecious plants) above the feminine; staminate flowers with a 4 or 5-parted perianth; pistillate flowers with a 4-parted or 4-lobed perianth, the outer divisions the larger, the stigma sessile; achene flattened, reflexed.

Leaves less than 5 cm. long, densely white-tomentose beneath.

1. U. nicaraguense.

Leaves more than 5 cm. long, appressed-pilose beneath.

2. U. mexicanum.

1. Urticastrum nicaraguensis (Liebm.) Kuntze Rev. Gen. Pl. 1: 635. 1891.

Discocarpus nicaraguensis Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 309. 1851.

Laportea liebmannii Wedd., Arch. Mus. Paris 9: 133. 1856-57.

Laportea nicaraguensis Wedd. in Prodr. 16¹: 84. 1869.

Nicaragua.

Medium-sized tree with thick spreading succulent branches; leaves broadly ovate, acutish at the base, crenate, appressed pilose above; dioecious; the male plants without leaves at thesis; staminate cymes 5 to 8 cm. long, the flowers in

glomerules; pistillate cymes 8 to 13 cm. long, suberect; achenes orbicular, 4 mm. broad.

2. Urticastrum mexicanum (Liebm.) Kuntze Rev. Gen. Pl. 2: 635. 1891.

Discocarpus mexicanus Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 309. 1851.

Urera platycarpa Wedd. Ann. Sci. Nat. III. Bot. 3, 18: 60. 1852.

Laportea platycarpa Wedd. Ann. Sci. Nat. IV. Bot. 1: 181.

Laportea mexicana Wedd. in DC. Prodr. 16[1]: 84. 1869.

Guatemala, Salvador. Mexico.

Shrub 3 to 5 meters high, the trunk terete, succulent, glabrous; leaves approximate at the ends of the branches, broadly ovate, 5 to 10 cm. long, 3 to 6 cm. wide, repandly crenate, pilose, sparsely armed with stinging hairs; plants dioecious; pistillate cymes diffusely branched, the branches densely retrorse-setose; achenes broadly suborbicular, strongly compressed, thickened at margin.

in the American species

11. POUZOLZIA Gaud. in Freyc. Voy. Bot. 503. 1826.

Urera

Low shrubs; stipules free, often persistent; leaves alternate, petiolate, 3-nerved, the upper surface densely cover-d with punctiform cystoliths; flowers monoecious, rarely dioecious, in small axillary glome ules; staminate flowers with a 4 to 5-parted or lobed perianth, the stamens 3 to 5; pistillate flowers with a 2 to 4-toothed, tubular, usually costate perianth, contracted at the apex, the stigma filiform, at length deciduous, the ovary included, free or coherent to the perianth, the achene usually black or dark brown and shining.

Margin of leaves entire.

Leaves white-tomentose beneath. 1. P. guatemalana.

Leaves not white-tomentose beneath.

Base of leaves oblique; petioles less than 1 cm. long. 2. P. obliqua.

Base of leaves not oblique; petioles more than 1 cm. long. 3. P. occidentalis.

Margin of leaves coarsely dentate-serrate. 4. P. phenacoides.

1. Pouzolzia guatemalana (Blume) Wedd., DC. Prodr. 16¹: 253. 1869.

Boehmeria guatemalana Blume Mus. Bot. Lugd. Bat. 2: 206. 1856.

Guatemala; Costa Rica. (Type from Guatemala).

Branches hirsutulous; petioles slender, 2 to 4 cm. long,

hirsute; leaves elliptic or elliptic-lanceolate, 6 to ~~10~~ ~~(or up to 15?)~~ cm. long, 2 to ~~4~~ cm. wide, acuminate at the apex, acute at the base, hispid above, ~~the nerves strongly impressed on upper surface, brown~~ hirsute on the lower surface; perianth of staminate flowers 4-toothed, densely pubescent; perianth of pistillate flowers truncate at the base, attenuate to the 4-toothed apex, striate, strigillose.

2. Pouzolzia obliqua Wedd. Arch. Mus. Paris 9: 405. 1856-57.

Margarocarpus obliqua Wedd. Arch. Mus. Paris 9: 204. 1856-57.

Guatemala, Salvador, Costa Rica. Panama (type from paraiso, Canal Zone). Colombia to Peru.

Branches hirsute-pubescent; petioles 2 to 7 mm. long; leaves ovate, 2 to ~~4~~ cm. long, 1 to ~~3~~ cm. wide, acute or acuminate at apex, rounded or subcordate at base, densely pilose above, hirsute and brown-tomentose beneath; style filiform, 8 mm. long, yellow-villose.

3. Pouzolzia occidentalis (Liebm.) Wedd. Arch. Mus. Paris 9: 410. 1856-57.

Leucococcus occidentalis Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 311. 1851.

Honduras; Salvador; Nicaragua; Panama. West Indies; Colombia, Venezuela.

Branches densely pubescent; petioles slender 2 to 8 cm. long; leaves lanceolate-ovate, acuminate, rounded or subcuneate at the base, 7 to 14 cm. long, 2.5 to 9 cm. wide, pilosulous

above, densely pubescent beneath and at the margin; perianth of pistillate flowers 10 to 15-ribbed, densely pubescent.

4. Pouzolzia phenacoides Killip, Journ. Washington Acad. Sci. 15: . 1925.

Costa Rica (Escasú, type locality, and Volcán de Poás).

Shrub 1 to 1.5 meters high, hirsutulous above, glabrate below; leaves ovate or ovate-lanceolate, up to 6 cm. long, 3 cm. wide, acuminate, rounded at base, strigillose above, appressed pilosulous on nerves beneath; plants monoecious, the flower clusters androgynous or unisexual, 1 to 5-flowered, subsessile or short-pedicellate, staminate flowers with a 4-lobed perianth; pistillate flowers 2 mm. long, about 12-nerved, finely puberulous without; achenes ovoid, 2 mm. long, dark brown, shining.

also in Gray. Herb. [illegible]

[illegible] 34362 (F, us)

To work over this material of Urmifolia & cylindrica, which is hardly separable in Costa

1. Boehmeria nivea (L.) Gaud. in Freyc. Voy. Bot. 499. 1826.

Urtica nivea L. Sp. Pl. 985. 1753.

Native, probably, of China; cultivated in Nicaragua and Salvador.

Leaves up to 13 cm. long, 12 cm. wide, obtuse to caudate-acuminate, cordate or cuneate at the base, coarsely serrate, scabrous above. "Seda vegetal," "Papelillo," "chichicaste" (Salvador).

2. Boehmeria aspera Wedd. Arch. Mus. Paris 9: 349. pl. 11, f. 24-28. 1856-57.

Costa Rica. Colombia, (type from Quindio).

Stem and branches densely pubescent; leaves thick, appressed strigose and scabrous above, densely brown-pubescent beneath, crenate-serrate, the larger 6 to 10 cm. long, 1.2 to 3 cm. broad, acuminate, the smaller ovate, 1 to 3 cm. long, 0.5 to 1.2 cm. wide, acute; flowers in dense glomerules 3 to 5 mm. in diameter; fruiting perianth 0.5 mm. broad, tapering at both ends, narrowly margined.

3. Boehmeria ulmifolia Wedd. ~~Arch. Mus. Paris 9: 347. 1856.~~

Boehmeria fallax ulmifolia Wedd. in DC. Prodr. 16¹: 198. 1869.

Guatemala to Panama (Province of Chiriquí). Mexico.

Shrub, 1.5 to 3 meters high, glabrous or sparsely pilosulous, rarely densely puberulent; leaves broadly ovate to ovate-lanceolate, acuminate a t the apex, rounded or acutish

12. Boehmeria Jacq. Enum. Pl. Carib. 9. 1760.

Trees, shrubs, or perennial herbs, unarmed; leaves alternate or opposite, toothed, petiolate, 3-nerved, often bearing punctiform cystoliths; flowers monoecious or dioecious, in small unisexual glomerules which are sessile in the axils of the leaves or form a spike, often leafy at the summit, or the inflorescence cymose-paniculate; staminate flowers with a 3 to 5-parted or 4-lobed perianth and a rudimentary ovary; pistillate flowers tubular or urn-shaped, 2 to 4-toothed, the stigma filiform, usually pubescent on one side; achene enclosed in the withering perianth.

Inflorescence cymose-paniculate; leaves broadly ovate, white-tomentose beneath. 1. B. nivea.

Inflorescence not cymose-paniculate.

Flower-clusters axillary on the main stem and leafy branches; leaves all alternate, unequal.

Larger leaves lanceolate, strongly bullate. 2. B. aspera.

Larger leaves ovate, flat or slightly rugose.

3. B. ulmifolia.

Flower-clusters forming a spike, often leafy at the summit.

Spikes spreading or drooping, leafless; leaves opposite; shrub or tree. 4. B. caudata.

Spikes suberect, leafy at the summit; leaves opposite on the stem, alternate on the branches; herb.

5. B. cylindrica.

and often oblique at base, coarsely crenate or serrate, hispidulous and appressed-pilose above, glabrous or densely pubescent beneath, the attenuate one unequal, the larger 7 to 15 cm. long, 3 to 9 cm. wide, the smaller 2.5 to 7 cm. long, 1 to 4 cm. wide, fruiting perianth oblong, tapering at both ends, curved, 1 mm. long, thin-margined, densely pubescent.

4. Boehmeria caudata Swartz, Prodr. Veg. Ind. Occ. 34. 1788.

Boehmeria flagelliformis Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 310. 1851.

Boehmeria guatemalensis Gdgr. Bull. Soc. Bot. France IV. 19: 287. 1919.

Guatemala; Costa Rica. Mexico, West Indies, and tropical South America.

Shrub or small tree, 2 to 5 meters high, leaves broadly ovate to elliptical, 5 to 20 cm. long, 3 to 10 cm. wide, acuminate at apex, acute or rounded at base, closely crenate, flat or rugulose and hispidulous above, dennely pubescent beneath; spikes up to 25 cm. long; fruiting perianth broadly ovate or obovate, the margin thin, membranous.

5. Boehmeria cylindrica (L.) Swartz, Prodr. Veg. Ind. Occ. 34. 1788.

Urtica cylindrica L. Sp. Pl. 984. 1753.

Boehmeria littoralis Swartz, Prodr. Veg. Ind. Occ. 34.. 1788.

Guatemala; Honduras; Costa Rica; Panama. Throughout

North America; West Indies and South America.

Stem simple or branched, puberulent or glabrescent; leaves narrowly lanceolate to ovate-lanceolate, acuminate at apex, subcordate or rounded at base, coarsely dentate, more or less pubescent; achenes broadly ovate, the margin thick.

stam - per 1.5 mm. long, incl. tufts ± twice ± half as long pedicels | √ = entire in leg

Cyst. above punct. ∪ furrow dissem

Achen about 0.6 mm, black tinsty

---

achen 2 mm

more or less

♂ per. 3.5-4 mm, incl. tufts ± 1.2 mm

Cyst. above ~~punctate~~ furrow. Ant whole surface with minute depressions.

Pleurocarp.

achen ± 1.5 mm ✓

Pleb. achen ~~0.5~~ 0.5 mm.; ♂ per ± 1.5 mm, incl. tufts ± 0.7

♂ fls. numerous

---

acrocarp

pl. dioecious, but heads commonly

---

rhizoids, stiff appressed white setae on

♂ ± 5 mm, including tufts 2.5 mm. ✓

Trichostomum

achen ± 1.5 mm ✓

pl. dioec ✓

Notes made on Pohlia after dissecting microscope study. Details in future papers. 7/12/50

Urticaceae

By Ellsworth P. Killip

Monoecious or dioecious herbs, shrubs, or trees, sometimes armed with stinging hairs and spines, usually bearing cystoliths; leaves simple, alternate or opposite (those of adjacent nodes or of a pair often unequal and dissimilar), entire, toothed, or rarely lobed, stipulate; flowers unisexual, small, greenish or greenish white, in unisexual or androgynous clusters, the perianth 2-5-lobed or parted or sometimes wanting; stamens as many as the perianth lobes and opposite them; ovary superior, 1-celled; style undivided, the stigma penicillate-capitate or filiform; fruit an achene, sometimes enclosed in the persistent perianth.

a. Leaves opposite, those of a pair often unequal.

b. Stigma short-penicillate; inflorescence paniculate, cymose, or capituliform. 1. Pilea

bb. Stigma filiform; flowers in sessile clusters in the leaf axils or in spikes. 2. Boehmeria

aa. Leaves alternate.

b. Pistillate flowers with a perianth.

c. Stigma sessile; plants usually armed with stinging hairs.

d. Annual herbs; stigma becoming hooked in fruit. 3. Fleurya

dd. Trees, shrubs, or suffrutescent herbs; stigma penicillate. 4. Urera

cc. Stigma filiform; plants without stinging hairs.

d. Pistillate perianth nerveless; leaves toothed, those of the adjacent nodes often very unequal. 2. Boehmeria

dd. Pistillate perianth strongly nerved; leaves entire (in Panama species), those of the adjacent nodes subequal. 5. Pouzolzia

bb. Pistillate flowers without a perianth.

c. Flowers in axillary glomerules. 6. Phenax

cc. Flowers in long, slender spikes. 7. Myriocarpa

1. Pilea Lindl.

Pilea Lindl. Coll. Bot. pl. 4. 1821. (Conserved)

Adicea Raf. Anal. Nat. 179. 1838.

Annual or perennial, monoecious or dioecious herbs, sometimes suffrutescent, often succulent, without stinging hairs; stipules intraaxillary, deciduous or persistent; leaves opposite, usually petiolate, toothed or entire, those of a pair equal or unequally unequal, similar in shape or very dissimilar; flowers in unisexual or androgynous clusters, these solitary or forming cymes or panicles; staminate flowers 4 (rarely 2 or 3)-parted, the pistillate normally 3-parted, the middle segment usually larger than the lateral ones; stigma sessile, penicillate; achenes compressed, orbicular or ovate.

a. Leaves entire.

b. Leaves orbicular to obovate, not more than 1 cm. long, 1-nerved or nerveless, succulent. 1. P. microphylla

bb. Leaves ovate- lanceolate or elliptic, more than 1 cm. long, 3-nerved, membranous. 2. P. parietaria

aa. Leaves (at least the larger of a pair) toothed.

b. Leaves of a pair dissimilar or very unequal, the larger more than twice as long as the smaller.

c. Inflorescence sessile or subsessile, few-flowered; smaller leaves subentire. 3. P. imparifolia

cc. Inflorescence pedunculed, often branched; smaller leaves toothed.

d. Leaves all distinctly petiolate; stipules persistent.

c. Smaller leaves broadly ovate or suborbicular; stem drying straw-colored; plant glabrous throughout. 4. P. cornuana

cc. Smaller leaves oblong; stem drying dark; plant usually pubescent toward tip of stem and on under side of leaf nerves. 5. P. trinuana

dd. Smaller leaves of a pair sessile or subsessile; stipules soon deciduous.

e. Larger leaves oblanceolate, up to 2 cm. wide, their petioles not more than 5 mm. long; segments of staminate flowers with filiform tips. 6. P. chiriquina

ee. Larger leaves ovate or elliptic, 4-7 cm. wide, their petioles more than 5 mm. long; segments of staminate flowers not filiform-tipped. 7. P. donnell-smithiana

bb. Leaves of a pair similar and equal, or if unequal the larger not more than twice as long as the smaller.

c. Achenes 1-2 mm. long, strongly flattened.

d. Leaves sessile or with a petiole much less than a third the length of the blade, often long-tapering at base. 8. P. periclada

dd. Leaves distinctly petiolate, rounded or abruptly narrowed at base.

e. Stipules not more than 1.5 mm. long, soon deciduous; plants glabrous throughout; tips of staminate perianth segments minute. 9. P. gracilipes

ee. Stipules well developed and persistent or subpersistent; plants, especially the leaves, usually pubescent; staminate segments with long, filiform tips.

f. Stem densely pubescent; leaves ovate or ovate-lanceolate, generally more than 2 cm. long, rugose. 10. P. rugosissima

ff. Stem glabrous; leaves rhombic-ovate, generally not more than 2 cm. long, flat. 11. P. auriculata

cc. Achenes minute, scarcely more than 0.5 mm. long, only slightly flattened.

d. Stem repent or trailing, with nearly equal internodes; leaves all orbicular. 12. P. nummulariifolia

dd. Stem erect, repent only at base; at least the principal leaves ovate, obovate, rhombic, or elliptic.

e. Inflorescence shorter than the petioles; plants essentially glabrous.

f. Annual; leaves rhombic-ovate or ovate, thin, up to 4 cm. long; achenes striaeinous, smooth. 13. P. hyalina

ff. Perennial; leaves elliptic-lanceolate, thick, 8-20 cm. long; achenes black, papillose. 14. P. pallida

ee. Inflorescence longer than the petioles; plants more or less pubescent.

f. Leaves obovate, rounded at apex, the cystoliths on upper surface much more numerous toward the margin. 15. P. involucrata

ff. Leaves ovate, ovate-lanceolate, or elliptic-lanceolate, acute or acuminate, rarely subobtuse, the cystoliths more evenly covering the upper surface.

g. Leaves ovate-lanceolate or elliptic-lanceolate, averaging more than 4 cm. long, sharply dentate; plants usually dioecious. 16. P. acuminata

gg. Leaves broadly ovate, averaging less than 4 cm. long, coarsely crenate-serrate; plants usually monoecious. 17. P. pubescens

1. Pilea microphylla (L.) Liebm. Dansk. Vid. Selsk. Skrift. V. 2:296. 1851.

Parietaria microphylla L. Syst. ed. 10. 1308. 1759.

Pilea muscosa Lindl. Coll. Bot. pl. 4. 1821.

Glabrous, succulent, much-branched herb, up to 30 cm. high, variable in size and habit; leaves usually crowded throughout the length of the branches, entire, succulent, those of a pair unequal, the larger prevailingly obovate, up to 1 cm. long, petiolate, obtuse or subacute, tapering at base, the smaller orbicular or obovate-orbicular, rarely more than 5 mm. long, sessile or short-petioled; cystoliths linear, transverse across the leaf-blade; plants monoecious, rarely dioecious, the flower clusters very small, sessile or nearly so; achenes ovate, about 0.3 mm. long.

Throughout the American tropics, up to 2500 m. altitude, occurring in a variety of habitats, as in crevices of stone walls or pavements, on mossy roots or rocks, or on the forest floor; often cultivated as a border plant or in pots.

Bocas del Toro: Changuinola Valley, Dunlap 358, 387; Chiriquí Lagoon, van Hadal 2487. Canal Zone: Balboa, Standley 28554, 29384 (cultivated; distributed as P. serpyllacea); Ancon, Piper 607; Fort Sherman, Standley 30046; Barro Colorado Island, Killip 40003; Shattuck 196 (cited as P. serpyllacea); Chagres, Pendler 252. Colon: Porto Bello, Pittier 2447. Panama: near Panama, Standley 26568, 29807, Herberto 67; between las Sabanas and Matias Hernandez, Standley 31834; Chepo, Pittier 4460.

A related species, P. herniarioides (Sw.) Lindl. may occur in Panama. It is distinguished by rhombic-orbicular leaves, the upper two or three pairs rosulate at the tip of the branches, the flower-clusters sessile within these rosettes. Pilea serpyllacea (H.B.K.) Liebm., also a related species, has been reported from Panama, but the records were apparently based on robust P. microphylla.

3. Pilea parietaria (L.) Blume, Mus. Bot. Lugd. 2:48. 1856.

Urtica parietaria L. Sp. Pl. 985. 1753.

Urtica ciliaria L. Sp. Pl. ed. 10, 1266. 1759.

Pilea ciliaria Wedd. Ann. Sci. Nat. III. 18:209. 1852.

Plant herbaceous or suffrutescent; leaves of a pair (especially the petioles) somewhat unequal, the blades thin, elliptic or ovate-lanceolate, 2-8 cm. long, 1-3 cm. wide, rarely longer, acuminate at apex, rounded or subcuate, sometimes submuriculate at base, 3-nerved, entire, usually ciliate, glabrous or sparingly strigillose with pellucid hairs, usually punctate beneath, the cystoliths linear or fusiform, usually inconspicuous; plants monoecious, the panicles 1 or 2 to an axil, shorter than the leaves, pedunculate, androgynous, or the upper almost wholly staminate and the lower pistillate; achenes minute, barely 0.5 mm. long.

Guatemala to Panama, on shaded banks and in moist forests, at altitudes between 1000 and 2000 m.; also in the West Indies.

Chiriqui: quebrada Velo, alt. 1800 m., Hoolsen & Schorr 242; Chiquero, Boquete District, Davidson 542.

3. Pilea imparifolia Wedd. Ann. Sci. Nat. III. Bot. 18:212. 1852.

Decumbent or subrepent herb with numerous erect branches, essentially glabrous throughout; leaves of a pair unequal and dissimilar, the larger rhombic-ovate to elliptic-oblong or obovate, 1-6 cm. long, 0.6 to 2 cm. wide, narrowed at apex, acute or attenuate at base, sessile or short-petioled, crenate-serrate above middle, the smaller leaves obovate-orbicular or orbicular-reniform, 0.6-1.5 cm. long, strongly asymmetrical, subentire; cystoliths linear on upper leaf surface, usually punctiform beneath; plants dioecious, the cymes sessile or subsessile, few-flowered; ♂ achenes about 1 mm. long.

Panama to northern Peru, eastward to the Guianas and Amazonian Brazil; usually in dense forests.

Coclé: Trail to Las Minas, north of El Valle de Antón, alt. 1000 m., climbing on trees and boulders, Allen 2470; El Valle de Antón, 1000 m., on tree trunk, Alston 8231.

This species is common in the forests of the Chocó, Colombia, where it shows much variation in shape and size of the leaves. Doubtless it occurs in Darien.

4. Pilea cormensis Killip, Jour. Washington Acad. Sci. 15:202. 1925.

Plant erect, up to 60 cm. high, glabrous throughout except the leaves, the stem as well as the foliage densely covered with elevated linear cystoliths; stipules orbicular or ovate, persistent; leaves coarsely serrate, dark green above, paler beneath, thin, sometimes sparingly strigillose above with hyaline hairs, the leaves of a node unequal and somewhat dissimilar, the larger ovate-lanceolate, 3-7 cm. long, 1.5-3 cm. wide, acuminate at apex, acute and often oblique at base, the petioles up to 4 cm. long, the smaller leaves broadly ovate or suborbicular, 1.5-2 cm. long, 1-1.5 cm. wide, acute; plants monoecious or dioecious, the flower clusters unisexual, pedunculate; staminate heads globose, about 1 cm. wide, the segments long-caudate; pistillate flowers loosely clustered in subglobose heads; achenes broadly ovate or suborbicular, about 1 mm. long.

Hab. In wet forests of western Panama and San José Province, Costa Rica, between 1300 and 2000 m. alt.

Chiriquí: Volcan's Trail, along Río Caldera, Killip & Cormana (Killip 3543, type); Cerro Horqueta, von Hagen & von Hagen 2010.

5. Pilea trianaeana Wedd. in DC. Prodr. 16[1]:121. 1869.

Stem repent below, at length erect, up to 20 cm. high, glabrescent or sometimes puberulent or strigillose above; leaves of a node similar in shape but at least the upper very unequal, oblong or oblong-lanceolate, acute or acuminate, usually acute at base, petiolate, crenate-serrate, glabrous, or sometimes pilose on the nerves beneath, the larger leaves 7-15 cm. long, 3-6 cm. wide, the smaller ones 1.5-4 cm. long, 0.5-1.3 cm. wide; plants dioecious; staminate flowers in dense globose heads which are solitary or form a branched cyme, the tips of the segments about 1.5 mm. long; pistillate flowers in lax, pedunculate panicles, the achenes 1-1.5 mm. long.

Panama and adjacent parts of Colombia, up to 1000 m. alt.

Coclé: vicinity of La Mesa, north of El Valle de Antón, 1000 m. alt., Allen 2385. El Valle de Antón, 1000 m. alt, Alston 0786.

6. Pilea chiriquina Killip, Jour. Washington Acad. Sci. 15:291. 1925.

Fleshy herb, up to 1 m. high, slightly suffrutescent toward base, glabrous throughout; leaves dark green above, paler, sparingly punctate beneath, crenate-serrate, triplinerved, those of a pair unequal and dissimilar, the larger oblanceolate, 3-9 cm. long, 1-3 cm. wide, acuminate, subauriculate at base, suboblique, the petioles up to 5 mm. long, the smaller leaves ovate or ovate-lanceolate, 0.7-3 cm. long, 0.5-1.5 cm. wide, acute, obliquely subcordate, sessile or subsessile; cystoliths minute, linear; plants dioecious, the flowers in compact pedunculed cymes, the staminate perianth segments with filiform tips, the pistillate cymes smaller, the achenes broadly ovate, about 1 mm. long.

Panama; in wet highland forests, between 1400 and 2100 m. alt.

Bocas del Toro: Bobalo Trail, northern slopes of Cerro Horqueta, Allen 4014, 4015 (only ♂ collection known). Chiriquí: upper Río Caldera, Killin 3546 (type); Bajo Chorro, Woolson & Schorr 561; slopes of Cerro Horqueta, Allen 4024.

7. Pilea donnell-smithiana Killip, Jour. Washington Acad. Sci. 15:202. 1925.

Erect herb, about 1 m. high, glabrous throughout; leaves ovate or elliptic, crenate-serrate nearly to base, rounded or subauriculate and often oblique at base, those of a node very unequal, the larger 10-30 cm. long, 4-7 cm. wide, caudate-acuminate, the petioles up to 3.5 cm. long, the smaller leaves up to 3 cm. long and 1.5 cm. wide, their petioles up to 5 mm. long; plants dioecious, the staminate flowers in small clusters in a small, few-branched panicle, the pistillate in few-flowered, short-peduncled, subglobose heads; achenes about 2 mm. long.

Costa Rica and adjacent parts of Panama; in wet forests at 1300 to 1700 m. alt.

Chiriquí: Holcomb's Trail, about 10 miles above El Boquete, Killin 3562.

A related species, P. costaricensis Donn. Sm., may occur in western Panama, material from Bajo Chorro, Chiriquí (Davidson 56 and 717). with very young inflorescence, perhaps being referable to it.

8. Pilea pteridoides Donn. Sm. Bot. Gaz. 31:121. 1901.

Usually a stout herb, somewhat suffrutescent below, erect, up to 30 cm. high, glabrous throughout or fuscous-pubescent on the petioles and leaf-nerves; stipules orbicular-ovate, persistent; leaves of a pair similar and subequal, oblong-elliptic or somewhat oblanceolate, 5-20 cm. long, 3-7 cm. wide, acuminate, [illegible] cuneate-attenuate at base and sometimes long-decurrent on the petiole, coarsely crenate-serrate above middle, triplinerved, the petioles up to 1 cm. long; cystoliths mostly punctiform; plants dioecious, the inflorescence cymose-paniculate, borne in the upper axils, shorter than the leaves; staminate flowers long-pedicelled, whitish, the lobes short-oblong-ovate; pistillate flowers sessile, the achenes ovate, 1.5-2 mm. long, suboblique.

Costa Rica and Panama.

Bocas del Toro: Fish Creek, vicinity of Chiriquí Lagoon, van Wedel 2303, 3237, 3518. Darién: Cana, alt. 760 m., R. S. Williams 810. Canal Zone: between Peluca Hydrographic Station and quebrada Peluca, along Río Boquerón, Steyermark & Allen 17252 (plant smaller in every way).

9. Pilea gracilipes Killip, Jour. Washington Acad. Sci. 15:294. 1925.

Plant glabrous throughout; stem repent at base, the branches erect, up to 40 cm. high; leaves of a node similar in shape and subequal (or the smaller about three-quarters as long as the larger), lanceolate or ovate-lanceolate, 1-9 cm. long, up to 3 cm. wide, acuminate at apex, acute or somewhat rounded at base, crenate-serrate, the cystoliths linear, faint; plants monoecious or dioecious, the staminate and pistillate inflorescences often borne in the same axil, their pedunales very slender; staminate flowers in globose heads, 5-7 mm. wide, the pistillate in loose glomerules forming an interrupted spike, or racemose-paniculate; achenes lance-ovate, 1-1.5 mm. long.

Guatemala to Panama; in wet mountain-forests, 1500 to 4000 m. alt.

Chiriquí: Cerro Horqueta, 1700-2100 m., Pittier 3230, 5436 (type); Volcán de Chiriquí, Woodson, Allen & Seibert 894, Woodson & Schery 448, Davidson 1027; Monte Lirio, Seibert 293; Rajo Chorro, Woodson & Schery 670; Quebrada Velo, Woodson & Schery 243, 269; between Casita Alta and Cerro Copete, Woodson & Schery 347.

10. Pilea rugosissima Killip, Proc. Biol. Soc. Washington 52:28. 1939.

Stem 30-100 cm. high, densely appressed-strigose; stipules oblong, persistent; leaves ovate or ovate-lanceolate, 1.5-6 cm. long, 1.5 to 3 cm. wide, acuminate at apex, rounded or cordulate at base, sharply serrate, strongly rugose, appressed-strigose between the veins of the upper surface, appressed-setose on the nerves and veins of the lower surface; plants dioecious, the staminate flowers sessile in a dense globose, pedunculed head, the perianth about 5 mm. long, including prominent subulate tips.

Panama.

Chiriquí: Bajo Chorro, Boquete District, about 1800 m. alt., Davidson 335 (type).

11. Pilea auriculata Liebm. Dansk. Vid. Selsk. Skrift. V. 2:339. 1851.

Stem repent at base, with many slender, erect or decumbent branches; stipules ovate, persistent; leaves rotund-rhombic, 8-30 (rarely to 50) mm. long and wide, cuneate at base, coarsely crenate, strigillose with a few hyaline hairs above, the leaves of a node similar and subequal but one usually with a shorter petiole; plants usually dioecious, the flowers in small clusters up to 1 cm. wide, their peduncles generally exceeding the adjacent petioles; staminate flowers nearly 4 mm. long, including appendages about 1.2 mm. long; pistillate flowers with 1 of the segments larger than the others, auriculate; achenes broadly ovate, nearly 2 mm. long.

Southern Mexico, Guatemala, Costa Rica (where common), and western Panama; wet forests from 1500 to 3000 m. alt.

Chiriquí: Chiriqui Volcano, Woodson, Allen & Seibert 934, Woodson & Schery 346, P. White 238. Bajo Chorro, Davidson 214.

12. Pilea nummulariifolia (Sw.) Wedd. Ann. Sci. Nat. III. Bot. 18:255. 1852. Urtica nummulariifolia Sw. in Svensk. Vet. Akad. 8:63, pl. 1, f. 2. 1787.

Stem repent or trailing, rooting at most of the nodes, villosulous; stipules persistent; leaves almost orbicular, 5-12 m. wide, crenate, usually strigillose with stiff, hyaline hairs on both surfaces, the cystoliths inconspicuous; plants dioecious or occasionally monoecious, the staminate flowers usually clustered in the uppermost axils, the pistillate in dense short-peduncled cymes; achenes barely 0.4 mm. long.

West Indies to Venezuela and Amazonian Peru; sometimes cultivated.

Canal Zone: In Powell's garden, Standley 28685, 41191.

13. Pilea hyalina Fenzl, Denkschr. Akad. Wiss. Math. Naturw. (Wien) 1:256. 1850.

Slender, erect annual, to 10-30 cm. high, the stem simple, glabrous; stipules very small, soon deciduous; leaves rhombic-elliptic or ovate, 1-4 cm. long, 0.8-2.5 cm. wide (extremes up to 5 x 4 cm.), acute at apex, cuneate at base, serrate except toward the base, thin-membranous, glabrous, or sparsely hyaline-strigose above; plants monoecious, the inflorescences androgynous, cymose-paniculate, shorter than the petioles, borne at nearly every node, the staminate flowers relatively few; achenes suborbicular, not more than 0.5 mm. long.

Widely distributed in the American tropics, from Mexico and the Lesser Antilles to Chile, Argentina, and Brazil, up to 1500 m. alt.

Bocas del Toro: Changuinola Valley, in garden, Dunlap 322. Canal Zone: Las Cascadas Plantation, near Summit, Standley 25704.

This species has been confused with P. mollis Gray, of the United States; the plant from Santiago de Veraguas, cited as P. mollis by Seemann (Bot. Voy. Herald 194), is undoubtedly P. hyalina.

14. Pilea pallida Killip, Jour. Washington Acad. Sci. 15:295. 1925.

Plant erect, 30 cm. or more high, essentially glabrous throughout; leaves elliptic-lanceolate, 8-20 cm. long, 3-7 cm. wide, caudate-acuminate, acute at base, sometimes suboblique, serrate, densely covered with fusiform and punctiform cystoliths, slightly silvery-lustrous and punctate beneath, the petioles up to 7 cm. long; plants dioecious; staminate flowers densely congested in sessile, globose clusters, the perianth 1.5-2 mm. long including tips about half as long; pistillate flowers in much-branched cymes, shorter than the petioles, the achenes about 0.6 mm. long, black, minutely papillose.

Panama and Costa Rica, in forests, 1000-1400 m. alt.

Bocas del Toro: Sibubi Falls, Sixaola Valley, Baxter & Baxter 375, type.

Coclé: El Valle de Anton, 1000 m. alt., Alston 8727.

(R.E.W.: The type locality was given as being in Panama in the original publication. I am unable to tell from available maps whether it really is in Panama or in Costa Rica; please correct-HPK)

15. Pilea involucrata (Sims) Urban, Symb. Antill. 1:293. 1899.

Urtica involucrata Sims, Bot. Mag. 51: pl. 2481. 1824.

Pilea sherringtonioides Wedd. Ann. Sci. Nat. III. Bot. 16:231. 1852.

Pilea rubescens var. involucrata Wedd. in DC. Prodr. 16 [1] :153. 1869.

Stem repent at base, the branches ascending, up to 30 cm. high, appressed-hirsute above; leaves massed at end of branches, obovate or rotundo-ovate, up to 5 cm. long and 3.5 cm. wide, rounded at apex, rounded or submucronulate at base, short-petioled, finely crenate, ciliate, strigillose with appressed hyaline hairs (rarely glabrate) above, sparingly to densely pubescent beneath, especially on the nerves, the cystoliths ~~[illegible]~~ on the upper surface linear or fusiform and confined to the margin; plants monoecious or dioecious,

the cymes generally unisexual, sessile or subsessile, shorter than the leaves; achenes minute, less than 0.5 mm. long.

Panama and the West Indies to Colombia and Venezuela, usually below 1000 m. altitude; cultivated in the United States.

Canal Zone: Empire, Crawford 578; Salamanca Hydrographic Station, Rio Pequeni, Woodson, Allen & Seibert 1600.

16. Pilea acuminata Liebm. Dansk. Vid. Selsk. Skrift. V. 2:302. 1851.

Stem subrepent at base, the branches erect, 20-40 cm. high, glabrous, or sparingly puberulent in upper part; leaves ovate-lanceolate, 4-10 cm. long, 2-3 cm. wide (extremes to 15 x 6 cm.), acuminate, cuneate or somewhat narrowed at base, coarsely serrate, sometimes bullate, usually strigillose with a few hyaline hairs above, hirsutulous on the nerves beneath; plants usually dioecious, the cymes diffusely branched, with peduncles up to 6 cm. long; staminate flowers with filiform appendages; achenes minute, barely 0.5 mm. long.

Mexico to Colombia; in wet shady places, between 600 and 1000 m. alt.

Coclé: El Valle de Anton, Allen 1737, Alston 2702.

17. Pilea pubescens Liebm. Dansk. Vid. Selsk. Skrift. V. 2:302. 1851.

Stem repent, at length erect and usually with several erect or ascending branches, brownish-pubescent; leaves usually massed at the end of the stem or branches, wanting or much reduced below, broadly ovate, up to 7 cm. long and 6 cm. wide, petiolate, usually coarsely crenate-serrate, often ciliate, sparingly strigillose with hyaline hairs or rarely glabrous above, hirsutulous beneath on the nerves and veins, the cystoliths linear and fusiform above, obscure beneath; plants monoecious or occasionally dioecious, the flowers in dense globose clusters forming a panicle up to 7 cm. long, slender-peduncled, the panicles usually androgynous with relatively few staminate flowers, the achenes minute, scarcely 0.5 mm. long.

Pilea rubescens Hk evidently has a wide distribution in the lowland tropics although doubtless much material has been wrongly referred to it. Direct comparison has ~~mark~~ been made between the Panama specimens here cited and the type, collected in southeastern Brazil by Lund and generously lent the author by the Botanisks Museum, Copenhagen, and there is perfect agreement.

Chiriqui: El Boquete, 1200 m., alt. Davidson 860. ~~Sam~~ Coclé: El Valle de Anton, Alston 8781. Darien: Cana, H. H. Williams 637.

2. Boehmeria Jacq.

Boehmeria Jacq. Enum. Pl. Carib. 9. 1760; Stirp. Amer. 246, pl. 157. 1763.

Trees, shrubs, or perennial herbs, unarmed and without stinging hairs; leaves opposite or alternate, toothed, 3-nerved, those of the adjacent nodes sometimes unequal and dissimilar; plants monoecious or dioecious, the flowers in globose, usually unisexual clusters in the axils of the leaves or forming a spike; staminate flowers 3 or 4 (rarely 5)-parted; pistillate flowers tubular, contracted at the throat, 3-4-toothed or entire, the stigm filiform, the achene enclosed in the persistent, sometimes enlarged perianth.

a. Flower-clusters forming a spike, often leafy at summit; leaves opposite on stem, alternate on branched; plants herbaceous. 1. B. cylindrica

aa. Flower-clusters axillary on the main stem and leafy branches; leaves alternate; ~~dimorphic;~~ shrubs, trees, or suffrutescent herbs.

b. Leaves coriaceous, bullate. 2. B. aspera

bb. Leaves membranous or subcoriaceous, flat or slightly rugulose.

c. Leaves of adjacent nodes very unequal and dissimilar, the smaller ones orbicular or subreniform, sessile. 3. B. ulmifolia

cc. Leaves of adjacent nodes similar or nearly so though unequal, all petiolate or the smaller leaves sometimes subsessile in B. Pavonii.

d. Leaves membranous, coarsely serrate; staminate perianth 3-lobed. 4. B. cuspidata

dd. Leaves subcoriaceous, finely serrulate or subentire; staminate perianth 4-lobed. 5. B. Pavonii

1. Boehmeria cylindrica (L.) Sw. Prodr. 34. 1788.

Urtica cylindrica L. Sp. Pl. 984. 1753.

Erect herb up to 1.5 m. high, the stem simple or branched; leaves opposite on the stem, alternate on the branches, narrowly lanceolate, ovate-lanceolate, or ovate, up to 18 cm. long and 7 cm. wide, acuminate at apex, rounded, subcordate, or subtruncate at base, coarsely dentate or serrate-dentate, glabrous, or puberulent beneath on the nerves; flower-clusters sessile in an erect or ascending spike which often is leafy toward the tip; plants monoecious; staminate perianth 4-lobed; pistillate perianth rotund-obovate, 1.5-2 mm. long and broad, 4-toothed, compressed, nearly sessile.

Eastern Canada; eastern and southern United States; Mexico to Panama; West Indies; southeastern Brazil.

Bocas del Toro: Changuinola Valley, Duncan 365. Canal Zone: Barro Colorado Island, Standley 41177, Starry 265.

2. Boehmeria aspera Wedd. Arch. Mus. Paris 9: 349. pl. 11. f. 24-28. 1856.

Shrub or suffrutescent herb, 1-3 m. high; leaves alternate, those of the adjacent nodes very unequal and somewhat dissimilar, crenate-serrate, coriaceous, strongly bullate, smooth or hispid above, densely cano-hirsute beneath, the larger lanceolate, 4-15 cm. long, 1-4 cm. wide, long-acuminate, the smaller leaves ovate, 1-5 cm. long, 1-2.5 cm. wide, acute; plants monoecious, the flower-clusters predominantly pistillate; staminate perianth 4-lobed; pistillate perianth about 1 mm. long, sericeo-pubescent at throat, bidentate.

Costa Rica to Peru.

Chiriqui: vicinity of Boca Nona and Quebrada Chiquero, alt. 1500 m., Woodson & Schery 560.

3. Boehmeria ulmifolia Wedd. Ann. Sci. Nat. IV. 1: 302. 1854.
Boehmeria fallax var. ulmifolia Wedd. in DC. Prodr. 16 [1] : 196. 1869.

Shrub or small tree up to 6 m. high, with slender, more or less pubescent branches; leaves serrate, thin, appressed-hispidulous above, pilosulous or puberulent beneath, those of adjacent nodes strongly dimorphic and unequal; larger leaves elliptic-ovate, 5-15 cm. long, 1.5-5 cm. wide, cuspidate-acuminate, acute or rounded at base, somewhat oblique, with slender petioles 5-30 mm. long, the smaller leaves (often soon deciduous) orbicular or subreniform, 5-10 mm. long and broad, usually emarginate at base, sessile; plants monoecious or dioecious, the flower-clusters axillary, generally unisexual; staminate perianth 4-lobed; pistillate perianth about 2 mm. long, stipate, very slightly compressed, bidentate.

Southern Mexico to Panama, from about 1000 to 2000 m. alt., ascending higher in western Panama.

Bocas del Toro: Robalo Trail, northern slopes of Cerro Horqueta, alt. 1800-2100 m., Allen 4913 (tentatively referred here). Chiriqui: Upper Chiriqui Viejo Valley, vicinity of Monte Lirio, alt. 1300-1900 m., Seibert 185; Potrero Valeto to summit, Volcan de Chiriqui, alt. 3500-4000 m., Woodson & Schery 46.

4. Boehmeria cuspidata Wedd. Arch. Mus. Paris 9: 345. 1856.
Boehmeria xanthina var. cuspidata Wedd. in DC. Prodr. 16 [1] : 197. 1869.

Slender shrub or suffrutescent herb, up to 3 m. high, the stem appressed-pubescent; leaves of adjacent nodes similar but unequal, cuspidate-acuminate, coarsely serrate, entire toward the cuneate or slightly rounded, ne subobliquo base, appressed-hispidulous above, sparingly pilosulous beneath, the larger leaves 6-15 cm. long, 3-6 cm. wide (smaller on the branches), the petioles

slender, up to 5 cm. long, the smaller leaves 3-5 cm. long, 1.5-2.5 cm. wide, the petioles up to 1.5 cm. long; plant monoecious (or dioecious?), the flower-clusters axillary; staminate perianth 3-lobed; pistillate perianth elliptic, about 1.5 mm. long, narrowly marginal, bidentate.

Southern Mexico to Panama.

Panama: Hills above Gamboa, alt. 600-900 m., Allen 1310.

5. Bocconia pavonii Wedd. Ann. Sci. Nat. IV. 1: 202. 1854.

Shrub or small tree, 3-6 m. high, the branches finely appressed-puberent; leaves alternate (those of the adjacent nodes similar or nearly so ~~thong~~ though quite unequal), finely serrulate or sometimes subentire, subcoriaceous, finely appressed-hispidulous above, usually appressed-sericeo-puberent on the nerves and veins beneath and puberulent in the areoles, the larger leaves oblong-lanceolate or elliptic-lanceolate 4-16 cm. long, 1.5-4.5 cm. wide, attenuate-acuminate, the petioles 1-3.5 cm. long, the smaller leaves similar though sometimes ovate, subsessile, and merely acute; plants dioecious, rarely monoecious, the clusters generally unisexual; staminate perianth 4-lobed; pistillate perianth attenuate at base, narrowly marginal.

Guatemala and Panama; Peru and Bolivia.

Chiriqui: El Boquete, alt. 1150 m., Davidson 830.

3. Fleurya Gaud.

Fleurya Gaud. Voy. Uran. Bot. 497. 1826.

Annual herbs, usually with stinging hairs; leaves alternate, petiolate, toothed, trinerved; plants monoecious or dioecious; flowers in androgynous or unisexual clusters in large panicles; staminate perianth 4-5-parted, with 4-5 stamens; pistillate perianth with 4 imbricated segments, the stigma papillose, at length hooked, the achenes oblique, compressed.

1. Fleurya aestuans (L.) Gaud. Voy. Uran. Bot. 497. 1826.

Urtica aestuans L. Sp. Pl. ed. 2. 1397. 1763.

Plant generally terrestrial, erect, simple or few-branched, up to 2 m. high, with stinging hairs usually present, the stem sometimes glandular; leaves broadly ovate, rarely ovate-lanceolate, up to 15 cm. long and 12 cm. wide, acute or acuminate, usually rounded at base, coarsely and sharply dentate, thin-membranous, the petioles up to 12 cm. long; panicles often much longer than the petioles; achenes 1-1.5 mm. long.

Widely distributed in the tropics at low elevations; often occurring in waste places.

Bocas del Toro: vicinity of Chiriqui Lagoon, von Wedel 1260, 2848. Canal Zone: San Pablo, Pittier 4063; Ancon, Pittier 2751; Balboa, Standley 25286, 25501, 26981; Gamboa, Standley 28305. Chiriqui: Puerto Armuelles, Woodson & Schery 849. Darien: Boca de Cupe, Allen 873. Panama: Bella Vista, Killip 39944; Exposicion, Heriberto 279; Coronal road, Standley 26765; Santa Marta road, Standley 29707; Las Sabanas, Paul 33; Chepo, Pittier 4767. Veraguas: Isla de Coiba, Mendes 130.

4. Urera Gaud.

Urera Gaud. Voy. Uran. Bot. 496. 1826.

Trees or shrubs, rarely scandent, usually with stinging hairs or stout prickles; stipules free, or more or less connate; leaves alternate, petiolate, 3- or 5-nerved at base, penninerved above, the cystoliths punctiform, linear, or wanting; plants usually dioecious, the flowers in axillary, dichotomous or irregularly branched cymes or panicles; staminate flowers with a 4-5-parted perianth and 4-5 stamens and a rudimentary ovary; pistillate flowers with 4 equal or unequal segments, the stigma penicillate-capitate, persistent; achenes straight or oblique, at least partially surrounded by the fleshy, enlarged perianth.

a. Leaves incised-lobed usually more than halfway to the midnerve. 1. U. laciniata

aa. Leaves not lobed, dentate, crenate, or subentire.

b. Achenes more than 2 mm. long; leaves coarsely dentate or sinuate-dentate; plants usually with stout prickles or spines. 2. U. baccifera

bb. Achenes less than 2 mm.long; leaves crenate, crenate-dentate, or subentire.

c. Leaves broadly ovate to orbicular-ovate, usually cordate; pistillate inflorescences usually long-petioled and equaling the adjacent petioles, the flowers in glomerules. 3. U. caracasana

cc. Leaves ovate-oblong to elliptic-ovate, rounded or slightly emarginate at base; pistillate inflorescences much shorter than the petioles, the flowers separate, pedicellate. 4. U. elata

1. Urera laciniata (Goudot) Wedd. Ann. Sci. Nat. III. 18:303. 1852.

Urtica laciniata Goudot ex Wedd. loc. cit., as synonym.

Urera simplicicaulis Benn. Bot. Voy. Herald 194. 1854.

Low tree, shrub, or erect herb, 1-4 m. high, the branches densely covered with stout bristles or spines; leaves 15-35 cm. long and wide, deeply incised-lobed (lobes acuminate, entire or few-toothed), spiny on the nerves beneath, membranous, glabrescent; inflorescence paniculate, up to 20 cm. long; staminate flowers in glomerules, the pistillate in glomerules or often distinct, sessile; achenes about 1.5 mm. long, suboblique.

Costa Rica to Venezuela and Peru, at low altitudes.

Canal Zone: Las Cruces, Seaman 872 (type of U. simplicicaulis).

2. Urera baccifera (L.) Gaud. Voy. Uran. Bot. 497. 1826.

Urtica baccifera L. Sp. Pl. ed. 2. 1398. 1762.

Coarse, erect, subligneous herb, or a shrub or small tree, 1-6 m. high, the stem usually covered with short, stout, prickles; leaves broadly ovate or round-ovate to oblong ovate, up to 35 cm. long and 25 cm. wide, rounded or cordate at base, coarsely dentate or irregularly sinuate-dentate, usually with scattered stinging hairs above and with such hairs or prickles on the nerves beneath; plants dioecious, the flowers in much-branched cymes; fruit succulent, 3-5 mm. long, white or rose-colored.

Widely distributed in tropical America. The hairs are very painfully stinging.

Canal Zone: Anson, Piper 6000; Fort Sherman, Standley 31160. Colon: Lagarto, Cowell 357. Darien: Pinogana, Allen 926. Panama: Taboguilla Island, Miller 2001; cabanas near Panama, Paul 361; Juan Diaz, Standley 30536; Rio Tacumen, Standley 26692, 26732; Rio Tapia, Standley 20344.

[Add Harmganti (Prov.?) R. S. Williams 692.]

RFW/ placement.

3. Urera caracasana (Jacq.) Griseb. Fl. Brit. W. Ind. 154. 1859.

Urtica caracasana Jacq. Hort. Schoenbr. 3:71. pl. 326. 1798.

Urera ~~baccifera~~ Wedd. Ann. Sci. Nat. III. 18:200. 1852.

Shrub or small tree, 2-10 m. high, with elongate branches, the young twigs, petioles, inflorescence, and leaf nerves usually armed with stinging hairs; leaves broadly ovate to ovate-lanceolate, up to 30 cm. long and 25 cm. wide, acuminate, cordate or cordulate at the base (basal lobes sometimes overlapping), crenate-dentate, scabrous, sometimes verrucose, above, more or less pubescent beneath; plants dioecious, the cymes regularly dichotomous; staminate flowers sessile in distinct, compact glomerules; pistillate flowers sessile or pedicellate in compact glomerules (rachis and segments sometimes becoming enlarged), ~~or borne singly or in three's~~, the segments usually densely covered with white, punctiform cystoliths; achenes 0.5-1 mm. long.

Widely distributed in continental tropical America from sea level to 2000 m. altitude. The species is here interpreted in a very broad sense, and the specimens cited show considerable variation in shape and texture of the leaves, presence or absence and nature of the foliar cystoliths, degree of pubescence, arrangement of the flowers, and size of the achenes. The American species of Urera are greatly in need of taxonomic revision.

Bocas del Toro: Changuinola Valley, Dunlap 174; Hierecita, Woodson, Allen & Seibert 1049; Dariland, von Wedel 1; Water Valley, von Wedel 686. Canal Zone: Naos Hill, Pittier 3804. Without precise locality, Christopherson 178. Chiriqui: Puerto Armuelles, Woodson & Schery 863. Between Paso Ancho and Monte Lirio, upper Rio Chiriqui Viejo Valley, Allen 1471 (variant described as Urtica ~~caracasana~~ verrucosa Liebm.); Cerro Colorado Chorcha, near Gualaca, Allen 5063; Baja Chorro, Boquete District, Davidson 349. Colon: Rio Pato, Pittier 3899. Darien: Boca de Cupe, Allen 911; R. S. Williams 716; Cuna, R. S.

Williams 815. Yapo, Allen 855; headwaters of Rio Chico, Allen 4592. Panama: Juan Diaz, Standley 30437; Arenoso, lower Rio Trinidad, Seibert 603.

4. Urera elata (Sw.) Griseb. Fl. Brit. W. Ind. 154. 1859.
Urtica elata Sw. Prodr. 37. 1788.

Shrub or small tree, 2-4 m. (occasionally to 6 m.) high, sometimes becoming scandent; leaves ovate-oblong to elliptic-ovate, up to 30 cm. long and 12 cm. wide, acuminate at apex, rounded at base, sometimes slightly emarginate, crenate-serrate, crenulate, or subentire, glabrescent, or occasionally hirsutulous on the principal nerves beneath; plants dioecious, the inflorescences dichotomous, much shorter than the petioles, staminate flowers sessile in glomerules, glabrous; pistillate flowers short-pedicled, usually borne singly.

With much the same distribution in Panama as the preceding species; also in Jamaica and Colombia.

Two forms are represented by the specimens cited below; one has relatively small leaves which bear punctiform cystoliths densely massed all over the upper surface, and agrees best with type material of U. elata in the British Museum; the other has leaves generally more than 15 cm. long, the cystoliths being short-linear and radiating from the center of the areoles to the veinlets. This latter variant has been confused with U. alnifolia (Poir.) Gaud., of French Guiana, which apparently cannot be separated from the common U. caracasana.

Bocas del Toro: Changuinola Valley, Dunlap 241; Rio Criamola, between Finca St. Louis and Konkintoe, alt. 10-50 m., Woodson, Allen & Seibert 1923. Canal Zone: Hayes 750; Barro Colorado Island, Standley 41133, Kenoyer 396; Madden Dam, Allen 2008. Chiriqui: vicinity of Rajo Hamm, alt. 1500-2000 m., Woodson & Schery 593, Woodson, Allen & Seibert 1005; near Monte Lirio, Rio Chiriqui Valley, C. White 63; Progreso, Cooper & Slater 176. El Boquete, alt. 1000-1300 m., Mason 4892, Pittier 2939. Coclé: El Valle de Anton, trail to Las Minas, alt. 1000 m., Allen 2461, 2712, vicinity of Finca Tomas Arias, alt. 600 m., Allen 3517. Colon: Rio Mato, alt. 10-100 m., Pittier 4130. Darien: Cana, R. S. Williams 794.

5. Pouzolzia Gaud.

Pouzolzia Gaud. Voy. Uran. Bot. 503. 1826.

Lecanocnemis Lieba. Kongl. Vid. Selsk. Skrift. V. 2:311. 1861.

Harmandiantha Wedd. Ann. Sci. Nat. IV. 1:203. 1854.

Low shrubs, rarely woody vines; stipules free, often persistent; leaves alternate (in American species), entire or rarely toothed, petiolate, trinerved, densely covered with punctiform cystoliths above; plants usually monoecious, the flowers in small clusters, in the leaf axils or forming spikes; staminate perianth depressed-globose in bud, 3-5-parted or -lobed, the stamens 3-5; pistillate perianth tubular, contracted at the throat, 2-4-toothed, completely enclosing the ovary, ~~often striate~~ strongly nerved, the stigm pubescent on one side, the achene crustaceous, shiny.

a. Leaves white-tomentose beneath, long-petiolate. 1. P. guatemalana

aa. Leaves not white-tomentose.

b. Petioles not more than 1 cm. long; base of leaves obliqua and usually submarginate. 2. P. obliqua

bb. Petioles much more than 1 cm. long; base of leaves not obliqua, cuneate or rounded at base. 3. P. occidentalis

1. Pouzolzia guatemalana (Blume) Wedd. in DC. Prodr. 16 [1] : 233. 1869.

Boehmeria guatemalana Blume, Mus. Bot. Lugd. Bat. 2:206. 1856.

Slender shrub; branches hirsutulous; leaves lanceolate or ovate-lanceolate, 6-15 cm. long, 2-4.5 cm. wide, caudate-acuminate, obtuse or acute at base, entire, sometimes bullate, asperate above, pilose on the nerves and veins and white-tomentose elsewhere beneath; petioles 3-5 cm. long, very slender; glomerules androgynous; staminate flowers 4-merous, the pistillate striate, 4-toothed.

Guatemala to Panama, lowlands of the Atlantic side; rare.

Bocas del Toro: beyond Rio San Juan, Changuinola Valley, Dunlap 457.

2. Pourolsia obliqua (Poepp.) Wedd. Arch. Mus. Paris 9:405. ~~1856-57.~~ 1857.
Neraudocarpus obliquus Poepp.; Wedd. Ann. Sci. Nat. IV. 1:304. 1854. (Boehmeria obliqua Poepp., as synonym).

Shrub or small tree, 1-5 m. high, densely hirsute nearly throughout, the branches sometimes scandent; leaves oblong or oblong-lanceolate, 2-15 cm. long, 1-5 cm. wide, entire, attenuate-acuminate at apex, oblique and usually emarginate at base, scabrous above, the petioles up to 1 cm. long; flower clusters androgynous or unisexual; staminate flowers 4-merous; achenes light brown or white, the styles 7-10 mm. long.

Guatemala to Venezuela and Peru, at low elevations; common on the Canal Zone forests and thickets.

Bocas del Toro: vicinity of Chiriqui Lagoon, von Wedel 1434, 2097; Changuinola Valley, Dunlap 370. Canal Zone: Barro Colorado Island, Kenover 327, Aviles 24b; Bolbon, Standley 25410, 25587, 29265; Hurel Hill, Pittier 3792; Rio Pedro Miguel, Standley 29970; Las Cascadas Plantation, Standley 28763; Cerro Gordo, near Culebra, Standley 30072; Gamboa, Pittier 6651, Standley 28306; Darien Station, Standley 31606; Las Cruces Trail, Standley 29070.

Note for R.E.W.: I have a specimen from "Cocoli," Biley 120. Don't know what province; do you?

3. Pouzolzia occidentalis (Liebm.) Wedd. Arch. Mus. Paris 9:410. 1856-57. 1857
Leucosycea occidentalis Liebm. Dansk. Vid. Selsk. Skrift. V. 2:311. 1851.

Shrub or small tree, up to 5 m. high, the branches densely hirsutulous to nearly glabrous; leaves elliptic-lanceolate to broadly lanceolate-ovate, 7-15 cm. long, 3-9 cm. wide, acuminate at apex, cuneate or rounded at base, entire appressed-pubescent above with stiff scattered hairs, more or less pilosulous beneath, especially on the nerves and at the margin; petioles slender, 2-3 cm. long; glomerules androgynous, rarely unisexual, few-flowered, the staminate flowers 4-merous.

Honduras to Colombia and Venezuela; also in Puerto Rico. In forests and thickets at low elevations.

Darien: Boca de Cupe, 40 m. alt., Allen 860. Panama: Taboga Island, Pittier 3530, Standley 27923.

6. Phenax Wedd.

Phenax Wedd. Ann. Sci. Nat. IV. 1: 191. 1854.

Unarmed shrubs or suffrutescent herbs; leaves alternate, petiolate, toothed, rarely entire, the cystoliths mainly punctiform; plants monoecious or dioecious, the flowers in dense, sessile, axiliary clusters; staminate flowers usually 4-lobed; pistillate flowers without a perianth, the small achene sessile and subtended by a brown, scarious bractlet, the stigm elongate-filiform, persistent.

a. Plants dioecious; leaves narrowly lanceolate, minutely serrulate, attenuate-acuminate. 1. P. angustifolius

aa. Plants monoecious; leaves ovate or ovate-lanceolate, coarsely crenate-serrate or crenulate-serrate.

b. Leaves ovate-lanceolate, narrowed at base, flat, glabrous except occasionally for a few hairs on the nerves beneath; stem glabrous. 2. P. mexicanus

bb. Leaves ovate, rounded or cordulate at base, more or less rugose, densely pubescent beneath; stem hirsute. 3. P. rugosus

1. Phenax angustifolius (H.B.K.) Wedd. Ann. Sci. Nat. IV. 1: 193. 1854. Boehmeria angustifolia H.B.K. Nov. Gen. & Sp. 2: 34. 1817.

Shrub or suffrutescent herb, up to 3 m. high; leaves narrowly lanceolate, 5-15 cm. long, 0.5-3 cm. wide, attenuate-acuminate, minutely serrulate, entire toward base, thin-membranous, glabrous above, very sparingly strigillose on the nerves and veins beneath, the petioles very slender; plants dioecious; achenes minute, about 0.3 mm. long, the styles 4-5 mm. long.

Costa Rica to Peru and Bolivia, usually at elevations of less than 800 meters.

Bocas del Toro: Changuinola Valley, Dunlap 371. Cocle: vicinity of El Valle, 100-800 m. alt., Allen 764.

2. Phenax mexicanus Wedd. Ann. Sci. Nat. IV. 1: 193. 1854.

Shrub, 2-6 m. high, glabrous throughout except occasionally on the under side of the leaf nerves and veins; leaves ovate-lanceolate, up to 15 cm. long and 5 cm. wide, acuminate, narrowed at base, crenate-serrate except toward base, membranous or subcoriaceous, the petioles up to 5 cm. long, usually much shorter; plants monoecious; achenes about 0.8 mm. long.

Southern Mexico to western Panama, usually at elevations of more than 800 meters.

Chiriqui: El Boquete, Maxon 4995, Pittier 2881, Davidson 452; Finca Lerida to Pena Blanca, Woodson & Schery 312; valley of the upper Rio Chiriqui Viejo, P. White 340.

A related species, P. hirtus (Sw.) Wedd., a common plant of the tropics, apparently has not yet been collected in Panama.

3. Phenax rugosus (Poir.) Wedd. in DC. Prodr. 16 ^{1} : 235 ^{39} . 1869.

Procris rugosa (Poir.) in Lam. Encycl. 5: 628. 1804.

Boehmeria rugosa Pers. Synops. 2: 556. 1807.

Shrub, 1-3.5 m. high, the stem stout, densely hirsute; leaves ovate, 3-12 cm. long, 1-7 cm. wide, acute or acuminate at apex, rounded or rarely cordulate at base, crenate-serrate, rugose, usually villous-tomentose beneath; plants monoecious, the glomerules very dense; achenes about 0.5 mm. long.

Southern Mexico to Venezuela and Bolivia, usually occurring above 1000 m. altitude.

Chiriqui: El Boquete, Pittier 2902, Davidson 544; vicinity of "New Switzerland," central valley of Rio Chiriqui Viejo, Allen 1370.

7. Myriocarpa Benth.

Myriocarpa Benth. Bot. Voy. Sulph. 168. 1844.

Unarmed trees or shrubs, without stinging hairs, leaves alternate, large, toothed or rarely subentire, 3-nerved, petiolate, bearing conspicuous cystoliths; plants dioecious, rarely monoecious; staminate flowers in small, contiguous glomerules, forming slender, dichotomous spikes, the perianth 4-parted; pistillate flowers in slender, elongate, dichotomous, sub-unilateral spikes, rarely in panicles, without a perianth but subtended by 2 or 4 bractlets, the achenes stipitate or sessile.

1. Myriocarpa yzabalensis (Donn. Smith) Killip, Proc. Biol. Soc. Washington 40: 29. 1927.

Myriocarpa longipes var. yzabalensis Donn. Smith. Bot. Gaz. 16: 13. 1891.

Shrub or tree, 2-10 m. high; leaves elliptic-ovate or broadly ovate, up to 35 cm. long and 18 cm. wide, acuminate at apex, rounded or slightly narrowed at base, denticulate, bearing numerous conspicuous linear cystoliths which radiate from the center of the areoles, glabrous above, glabrous, or pubescent on the nerves beneath, the petioles up to 35 cm. long; staminate spikes up to 10 cm. long; pistillate spikes very slender, pendant, up to 60 cm. long, the bractlets 2, soon deciduous, the achenes scabrid with sparse short hairs, ciliate, at length black and sometimes lustrous.

Guatemala to Panama, generally at elevations of less than 1000 meters. Bocas del Toro: Changuinola Valley, Dunlap 300; Chiriqui Lagoon, von Wedel 1411, 1445, 1505, 1692, 1699, 1886; Columbus Island, Skutch 5. Almirante, Cooper 414. Canal Zone: Chagres, Fendler 280; Barro Colorado Island, Shattuck 242, 494, Aviles 27, Standley 31451, 40922; Frijoles, Killip 3379, Standley 27572, Piper 5841; Gatun, Standley 27194; Gamboa, Standley 28400; Obispo, Standley 31697; Fort Sherman, Standley 30956; Chiriqui: El Boquete, Maxon 4946, Pittier 2878, 5157.

Coclé: El Valle, Allen 4218. Colon: Porto Bello, Pittier 2487. Panama: Rio Tapia, Standley 26215, 28277; Rio Tecumen, Standley 29360; Santa Rita Trail, Cowell 113; Rio Indio, Dodge & Allen 17289; Quebrada Salamanca, Dodge, Stevermark & Allen 16997.

R.E.W.: In what province are the last 3 localities? EPK